

HANSEATIC

TVR2120

MODEL

SERVICE MANUAL

SPECIFICATIONS

(TV SECTION)

PICTURE SIZE: 20 inch
SYSTEM: PAL
FREQUENCY RANGE
VHF (L): 2-4,X,Y,Z,S1-S7
VHF (H): S8-S10,5-12,S11-S36
UHF: S37-S41,21-69
INTERMEDIATE FREQUENCY
Picture IF Carrier Frequency: 38.9 MHz
Color Sub Carrier Frequency: 34.47 MHz
Sound IF Carrier Frequency: 33.4 MHz
**SOUND INTERMEDIATE
FREQUENCY:** 5.5 MHz
MAXIMUM OUTPUT POWER: 2.5 W
10% THE OUTPUT POWER: 1.5 W
SPEAKER: 16 x 2
POWER SOURCE: AC 230V

(VCR SECTION)

VIDEO SIGNAL: CCIR 625 lines 50 fields
VIDEO RECORDING SYSTEM: VHS, 2 rotary heads helical scanning system
Luminance : FM azimuth recording
Color signal : converted sub-carrier 1 track
AUDIO TRACK: 12.65 mm high density tape
TAPE FORMAT: SP : 23.39 mm/sec
TAPE SPEED:
INPUT LEVEL: Video : VIDEO IN socket 1.0Vp-p, 75 ohm unbalanced
Audio : AUDIO IN socket -3.8dB, 50K ohm unbalanced
OUTPUT LEVEL: Video : VIDEO OUT socket 1.0Vp-p, 75 ohm unbalanced
Audio : AUDIO OUT socket -3.8dB, 1k ohm unbalanced
WEIGHT: 20.5 Kg
DIMENSIONS: 508(W) X 435(D) X 425(H) mm

Desing and specification are subject are to change without notice.

SERVICING NOTICES ON CHECKING

1. KEEP THE NOTICES

As for the places which need special attentions, they are indicated with the labels or seals on the cabinet, chassis and parts. Make sure to keep the indications and notices in the operation manual.

2. AVOID AN ELECTRIC SHOCK

There is a high voltage part inside. Avoid an electric shock while the electric current is flowing.

3. USE THE DESIGNATED PARTS

The parts in this equipment have the specific characters of incombustibility and withstand voltage for safety. Therefore, the part which is replaced should be used the part which has the same character.

Especially as to the important parts for safety which is indicated in the circuit diagram or the table of parts as a Δ mark, the designated parts must be used.

4. PUT PARTS AND WIRES IN THE ORIGINAL POSITION AFTER ASSEMBLING OR WIRING

There are parts which use the insulation material such as a tube or tape for safety, or which are assembled in the condition that these do not contact with the printed board. The inside wiring is designed not to get closer to the pyrogenic parts and high voltage parts. Therefore, put these parts in the original positions.

5. TAKE CARE TO DEAL WITH THE CATHODE-RAY TUBE

In the condition that an explosion-proof cathode-ray tube is set in this equipment, safety is secured against implosion. However, when removing it or serving from backward, it is dangerous to give a shock. Take enough care to deal with it.

6. AVOID AN X-LAY

Safety is secured against an X-ray by considering about the cathode-ray tube and the high voltage peripheral circuit, etc.

Therefore, when repairing the high voltage peripheral circuit, use the designated parts and make sure not modify the circuit.

Repairing except indicates causes rising of high voltage, and it emits an X-ray from the cathode-ray tube.

7. PERFORM A SAFETY CHECK AFTER SERVICING

Confirm that the screws, parts and wiring which were removed in order to service are put in the original positions, or whether there are the portions which are deteriorated around the serviced places serviced or not. Check the insulation between the antenna terminal or external metal and the AC cord plug blades. And be sure the safety of that.

(INSULATION CHECK PROCEDURE)

1. Unplug the plug from the AC outlet.
2. Remove the antenna terminal on TV and turn on the TV.
3. Insulation resistance between the cord plug terminals and the external exposure metal [Note 2] should be more than 1M ohm by using the 500V insulation resistance meter [Note 1].
4. If the insulation resistance is less than 1M ohm, the inspection repair should be required.

[Note 1]

If you have not the 500V insulation resistance meter, use a Tester.

[Note 2]

External exposure metal: Antenna terminal
Earphone jack

HOW TO ORDER PARTS

Please include the following informations when you order parts. (Particularly the CHASSIS CODE.)

1. MODEL NUMBER and CHASSIS CODE

You can find it in the back of your unit.

2. PART NO. and DESCRIPTION

You can find it in your SERVICE MANUAL.

IMPORTANT

Inferior silicon grease can damage IC's and transistors.

When replacing an IC's or transistors, use only specified silicon grease (YG6260M).

Remove all old silicon before applying new silicon.

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DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: BACK CABINET (Refer to Fig. 1-1)

1. Remove the 8 screws ①.
2. Remove the 2 screws ②.
3. Remove the Back Cabinet in the direction of arrow.

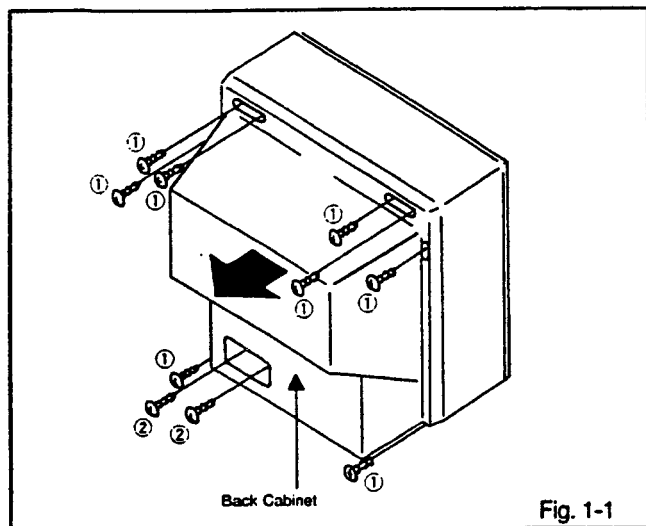


Fig. 1-1

CAUTION: BEFORE REMOVING THE ANODE CAP, DISCHARGE ELECTRICITY BECAUSE IT CONTAINS HIGH VOLTAGE. BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.

1-2: TV BLOCK (Refer to Fig. 1-2)

1. Remove the CRT PCB in the direction of arrow (A), then unplug the following connector: (CP850 13 pins).
2. Remove the Anode Cap. (Refer to REMOVAL OF ANODE CAP)
3. Disconnect the following connectors: (CP820 12 pins, CP860 3 pins, CP810 8 pins, CP830 9 pins, CP802 5 pins, CD804 1 pin and CP005 1 pin).
4. Slide out the TV Block in the direction of arrow (B).

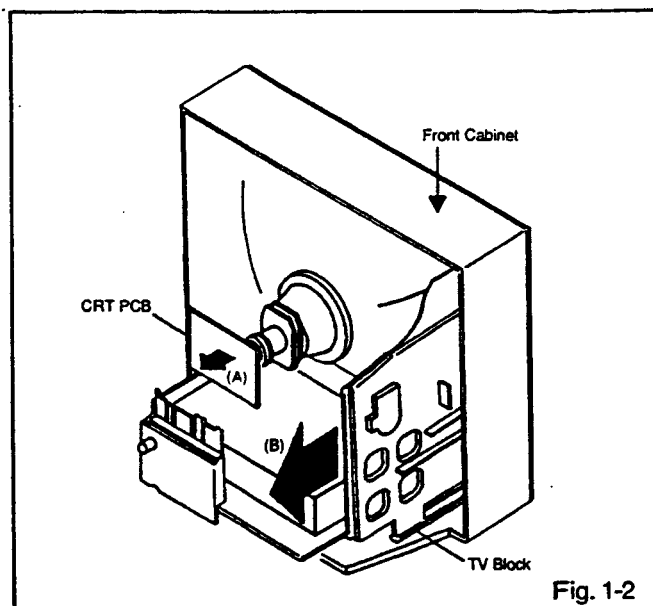


Fig. 1-2

1-3: VCR BLOCK (Refer to Fig. 1-3)

1. Disconnect the following connector: (CP301 2 pins and CP302 2 pins).
2. Remove the 2 screws ①.
3. Unlock the 2 supports ②.
4. Remove the VCR Block in the direction of arrow.

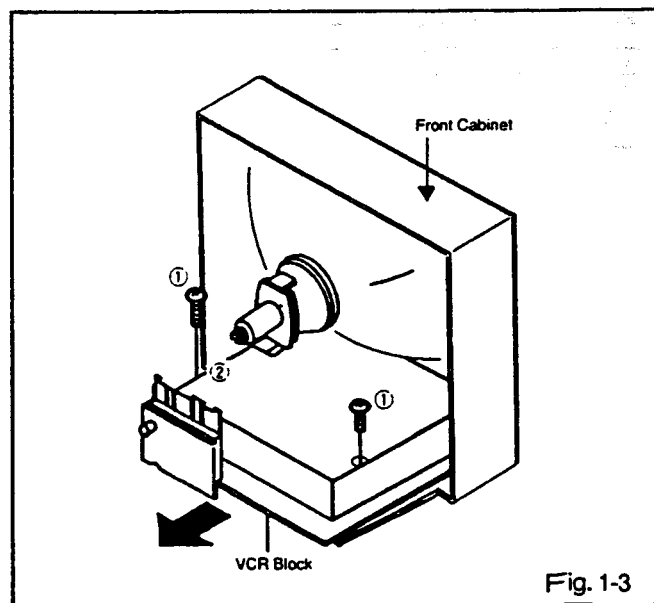
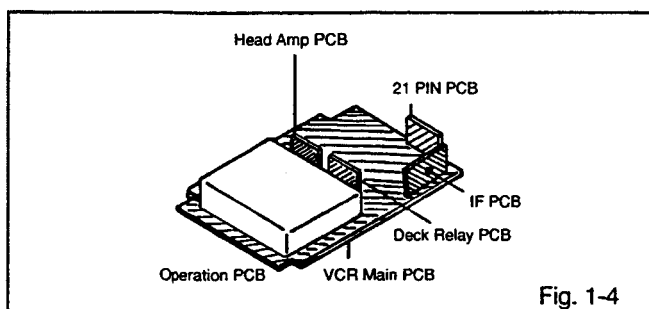


Fig. 1-3

DISASSEMBLY INSTRUCTIONS

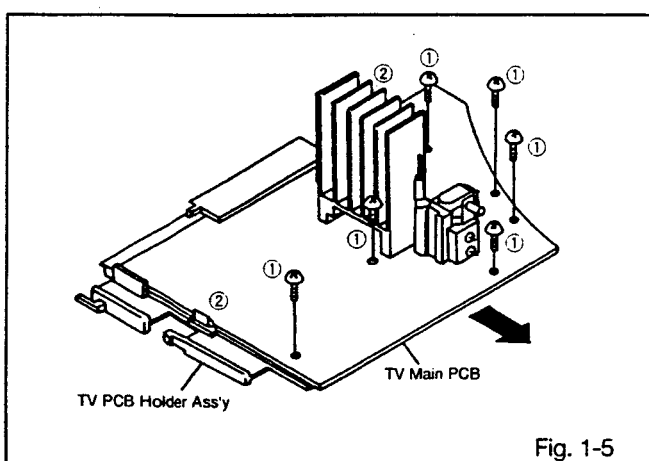
1-4: LOCATION OF PRINTED CIRCUIT BOARDS. (Refer to Fig. 1-4)

CAUTION: BEFORE ATTEMPTING TO REMOVE OR REPAIR ANY PCB, UNPLUG THE POWER CORD FROM THE AC SOURCE.



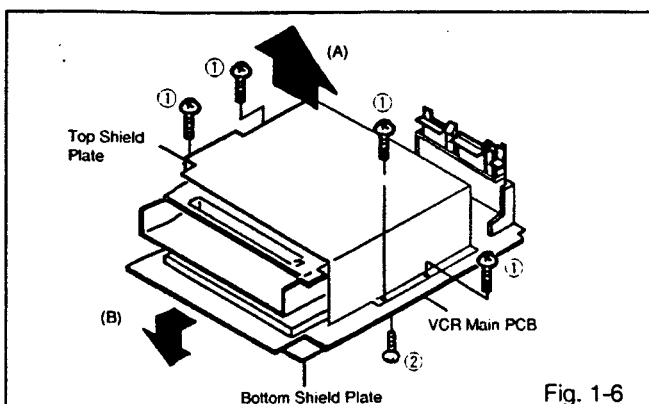
1-5: TV MAIN PCB (Refer to Fig. 1-5)

1. Remove the 6 screws ①.
2. Unlock the 2 supports ② and remove the TV Main PCB in the direction of the arrow.



1-6: TOP SHIELD PLATE AND BOTTOM SHIELD PLATE (Refer to Fig. 1-6)

1. Remove the 4 screws ①.
2. Remove the Top Shield Plate in the direction of arrow (A).
3. Remove the screw ②.
4. Remove the Bottom Shield Plate in the direction of arrow (B).

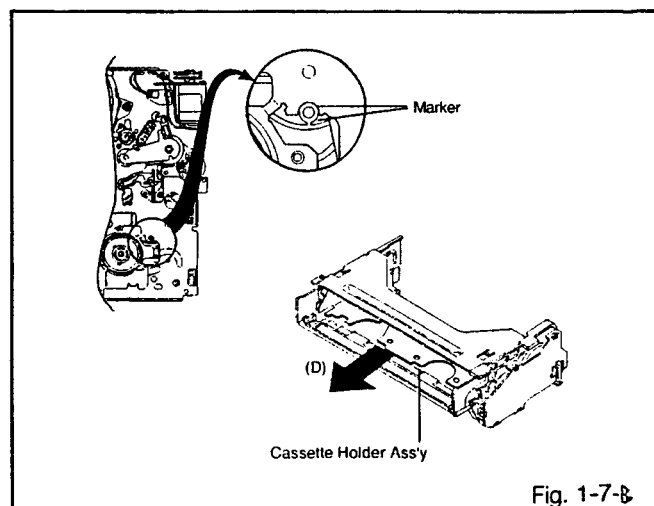
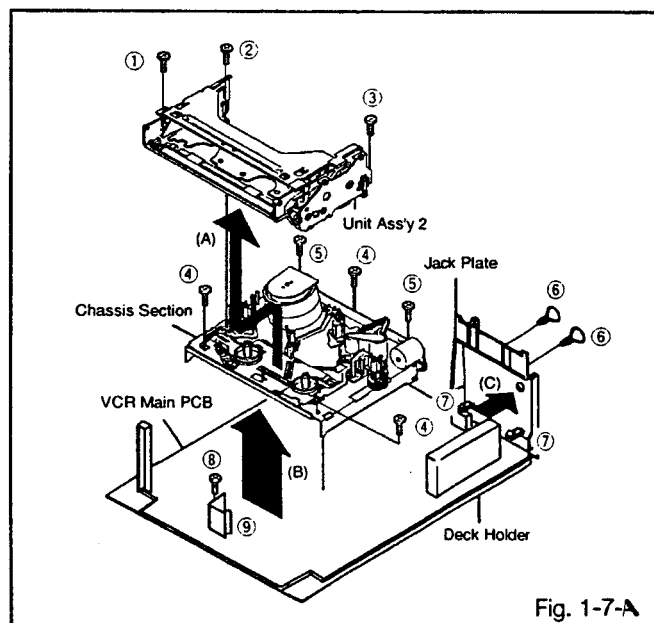


1-7: UNIT ASS'Y 2, CHASSIS SECTION, JACK PLATE AND VCR MAIN PCB (Refer to Fig. 1-7-A)

1. Remove the screw ①.
2. Remove the screw ②.
3. Remove the screw ③.
4. Remove the Unit Ass'y 2 in the direction of arrow (A).
5. Remove the 3 screws ④.
6. Remove the 2 screws ⑤.
7. Remove the Chassis Section in the direction of arrow (B).
8. Remove the 2 screws ⑥.
9. Unlock the 2 supports ⑦ and remove the Jack Plate in the direction of arrow (C).
10. Remove the screw ⑧.
11. Unlock the support ⑨ and remove the VCR Main PCB in the direction of arrow (B).

NOTE

When installing the Unit Ass'y 2, align the timing marks and pull the Cassette Holder Ass'y in the direction of arrow (D). (Refer to Fig. 1-7-B)



DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF DECK PARTS

2-1: LINK GEAR (R) / CLUTCH GEAR (Refer to Fig. 2-1)

1. Unlock support ①.
2. Remove the BOT Sensor Cover and BOT Reflector.
3. Unlock the 3 supports ②.
4. Remove the Side Bracket R2 and Spring Earth.
5. Remove the Flap Lever Spring.
6. Remove the Flap Lever, Link Gear (R) , Cam Gear Ass'y and BOT Lever.

NOTE

When installing the Link Ass'y and Link Gear (R), align the timing Marks.

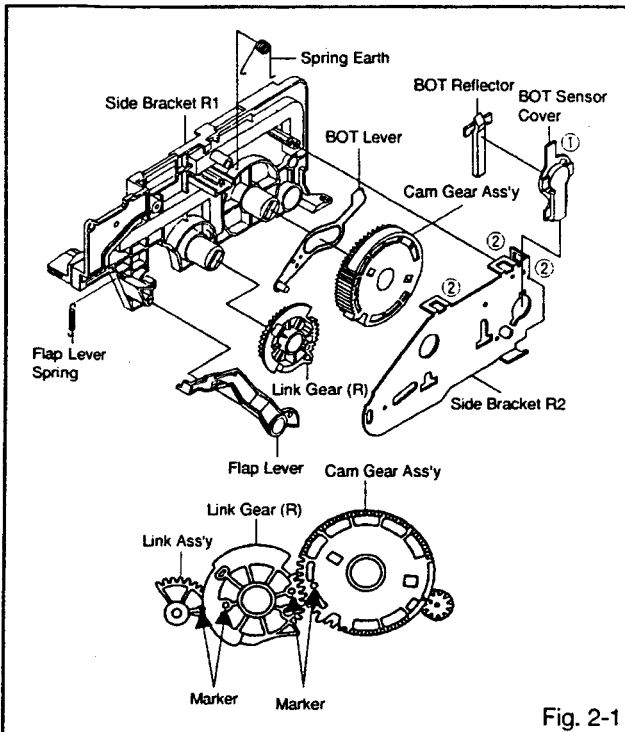


Fig. 2-1

2-2: TOP BRACKET / TAPE PIECE GUIDE (Refer to Fig. 2-2)

1. Unlock the 2 supports ①.
2. Remove the Tape Piece Guide.
3. Unlock the 4 supports ②.
4. Remove the Top Bracket.
5. Remove the Side Bracket R1 and Side Bracket L.
6. Unlock the support ③.
7. Remove the Joint Gear.
8. Remove the Bracket R Spring.

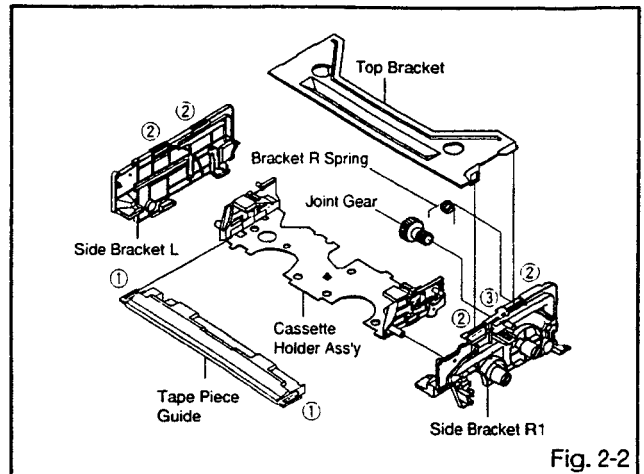


Fig. 2-2

2-3: LINK ASS'Y (Refer to Fig. 2-3)

1. After removing in the direction (A) of Link Ass'y, remove the Link Ass'y in the direction (B).

NOTE

Install the (B) first, then install the (A).

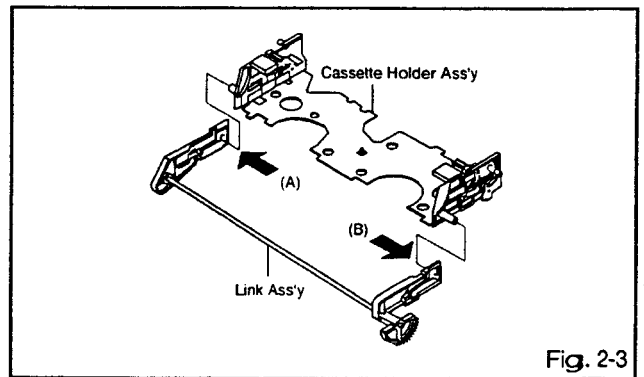


Fig. 2-3

2-4: CASSETTE SIDE R (Refer to Fig. 2-4)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side R.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker R.

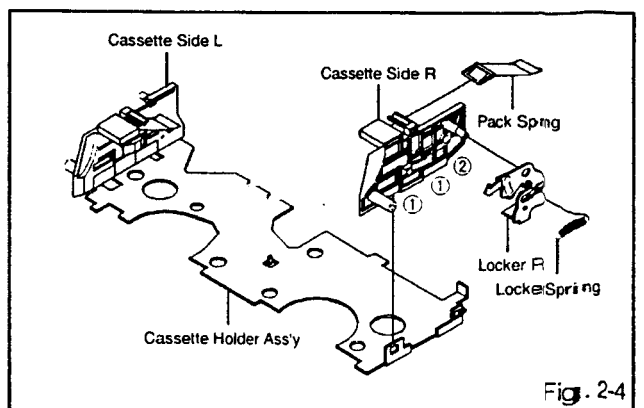


Fig. 2-4

DISASSEMBLY INSTRUCTIONS

2-5: CASSETTE SIDE L (Refer to Fig. 2-5)

1. Unlock the 2 supports ①.
2. Remove the Cassette Side L.
3. Remove the Pack Spring.
4. Remove the Locker Spring.
5. Unlock support ②.
6. Remove the Locker L.

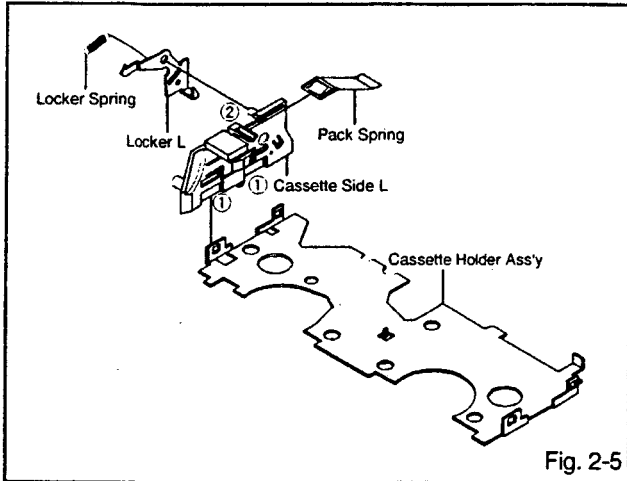


Fig. 2-5

2-6: BRAKE BRACKET (Refer to Fig. 2-6)

1. Remove the Main Brake Spring, S-S Brake Spring, Joint Arm Spring and T-S Brake Spring.
2. Remove the 2 screws ①.
3. Remove the screw ②.
4. Remove the Brake Bracket.
5. Remove the Sub Brake S, Sub Brake T, Main Brake S Ass'y and Main Brake T Ass'y.
6. Remove the Joint Arm.
7. Remove the Reflector LED.

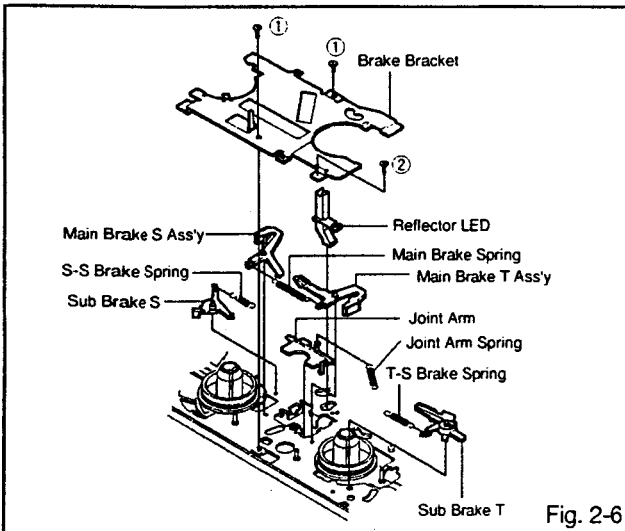


Fig. 2-6

2-7: TENSION BAND (Refer to Fig. 2-7)

1. Remove the Tension Arm Spring 1.
2. Remove the Tension Arm Spring 2.
3. Remove the Tension Adjust.
4. Remove the Tension Arm Ass'y.
5. Remove the Tension Band Ass'y.
6. Remove the Tension Lever 2 Ass'y.

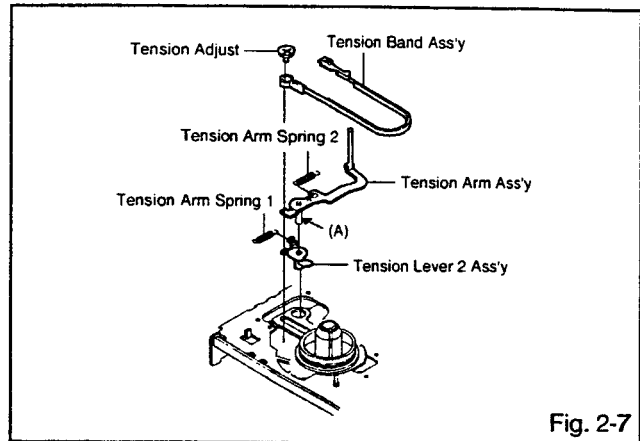


Fig. 2-7

NOTE

1. Install the Tension Band Ass'y without twisting it.
2. Oil (kyoudo oil slaidasu #150) the area marked with A in Fig. 2-7.

2-8: REEL DISK (Refer to Fig. 2-8)

1. Remove the Reel Disk S and Reel Disk T.
2. Remove the 2 polyslider washers.

NOTES

1. Installation of Reel Disk after performing step 1, 2 and 3 in section 2-7 on page 9.
2. The Height Adjustment washers are sometimes attached to the back of the Reel Disk.
3. Clean the Reel Disk Shaft and put in height adjusting washers.
4. Be careful not to damage the Tension Band Ass'y at the time of removal and installation.
5. Be careful not to scratch the Reel Disk Shaft with the polyslider washer or the tool at the time of removal and installation.
6. After oiling (Kyoudo oil slaidasu #150) the Reel Disk Shaft, install the new Reel Disk S and Reel Disk T again.
7. After installation, adjust the height of the Reel Disk.
(Refer to item 1-1 of MECHANICAL ADJUSTMENTS)
8. After installation, adjust and confirm the tension post position.
(Refer to item 1-2 of MECHANICAL ADJUSTMENTS)

DISASSEMBLY INSTRUCTIONS

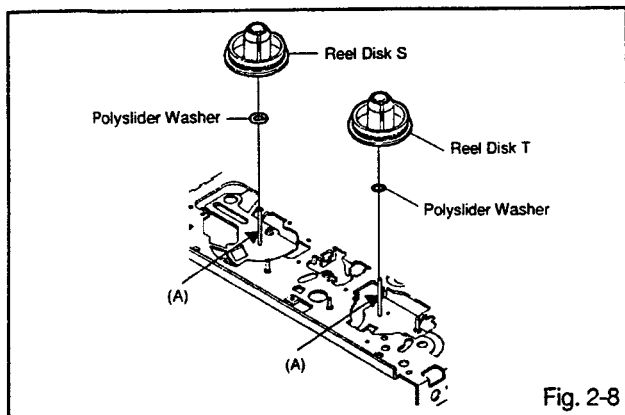


Fig. 2-8

2-9: PINCH ROLLER / CASSETTE OPENER (Refer to Fig. 2-9)

1. Unlock the support ①.
2. Remove the Pinch Roller.
3. Remove the screw ②.
4. Unlock the 2 supports ③.
5. Remove the Cassette Opener.
6. Remove the Spring P5 and Arm P5 Ass'y.
7. Remove the Cam Gear and Cam Pinch Roller.
8. Remove the polyslider washer and Cam P5.

NOTES

1. Do not touch the Pinch Roller. (Use gloves.)
2. When installing the Cam P5, Cam Pinch Roller and Cam Gear, align the timing marks.

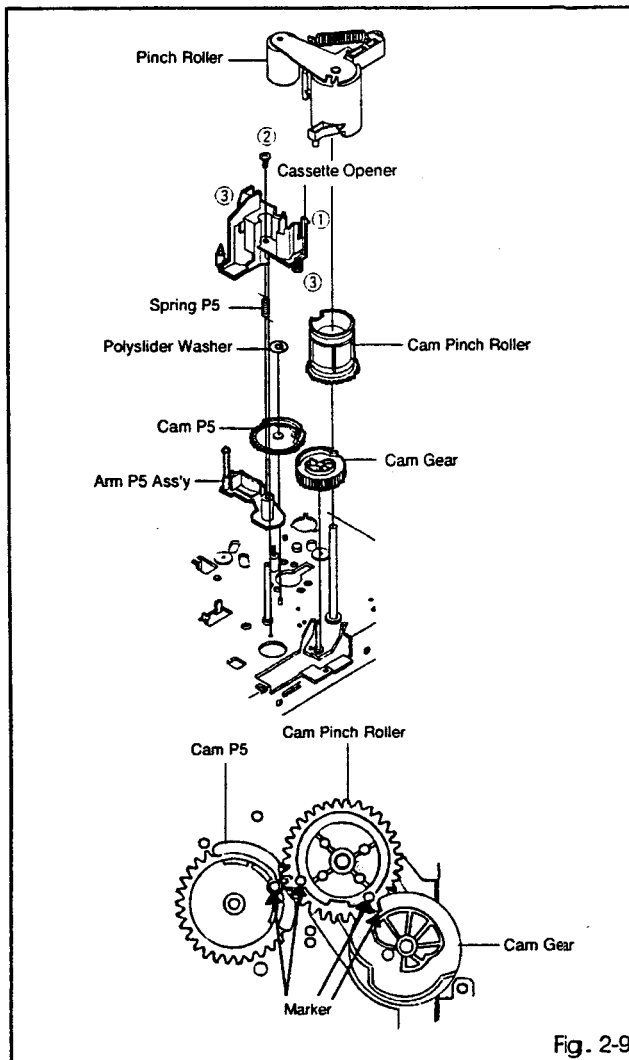


Fig. 2-9

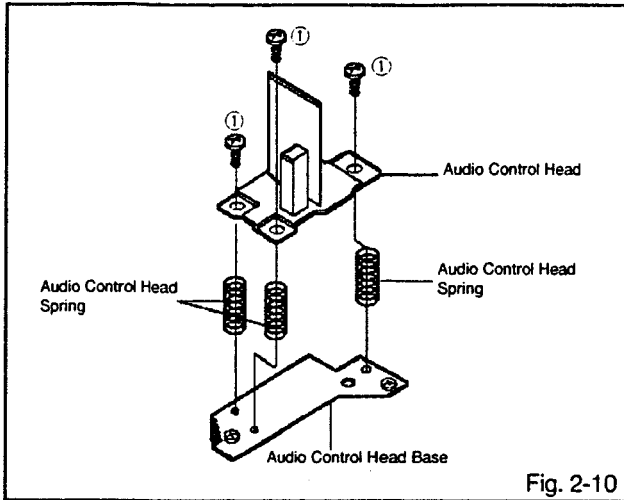
2-10: AUDIO CONTROL HEAD (Refer to Fig. 2-10)

1. Disconnect the connector: (CX4001 6 pins) on the Audio Control Head PCB.
2. Remove the 3 screws ①.
3. Remove the 3 Audio Control Head Springs.
4. Remove the Audio Control Head.

NOTES

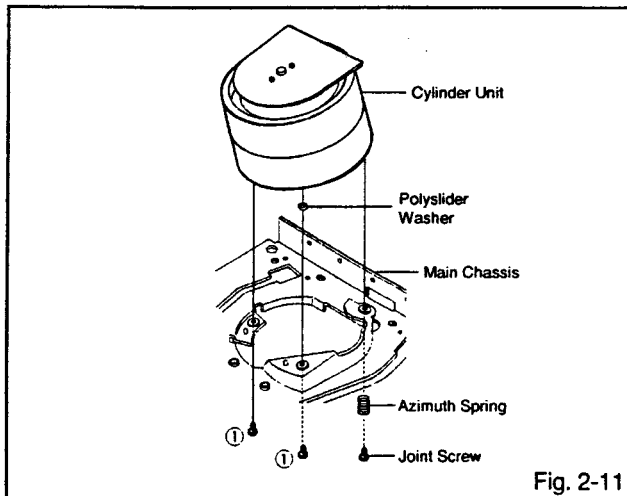
1. Do not touch the head by any means when replacing the Audio Control Head. (Use gloves.)
2. After replacement, confirm the following adjustments.
 - a. MECHANICAL ADJUSTMENTS: ITEM 2-2
 - b. MECHANICAL ADJUSTMENTS: ITEM 2-3

DISASSEMBLY INSTRUCTIONS



2-11: CYLINDER UNIT (Refer to Fig. 2-11)

1. Disconnect the following connectors:
(CP4101 5 pins and CP4103 4 pins).
2. Remove the Joint Screw, then remove the Azimuth Spring.
3. Remove the 2 screws ①, then remove the Polyslider Washer and Cylinder Unit from the Main Chassis.

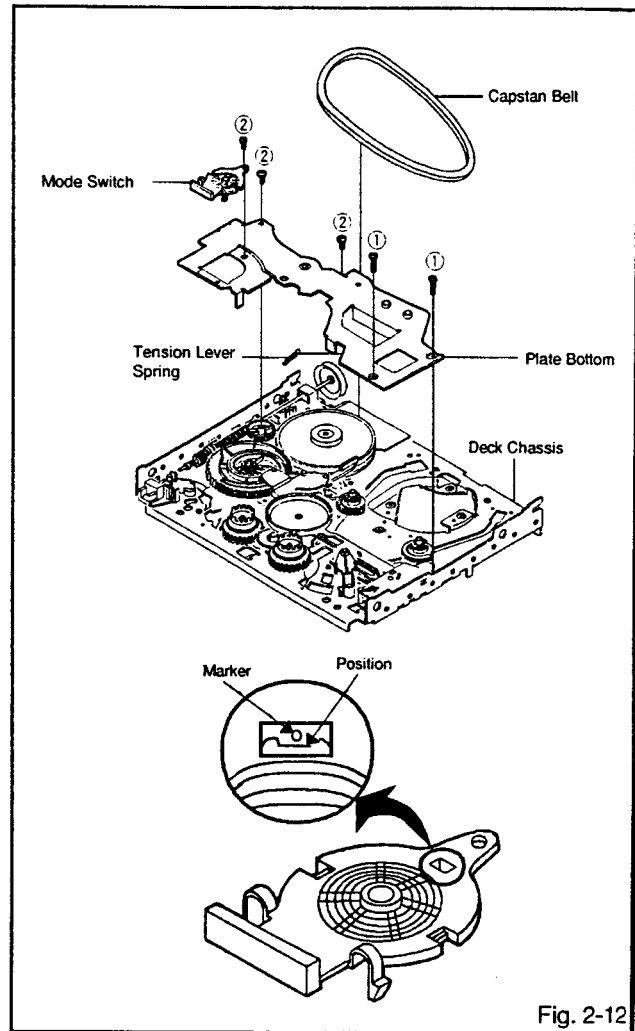


2-12: PLATE BOTTOM (Refer to Fig. 2-12)

1. Remove the Capstan Belt.
2. Remove the 2 screws ①.
3. Remove the 3 screws ②.
4. Remove the Mode Switch.
5. Remove the Tension Lever Spring.
6. Remove the Plate Bottom.

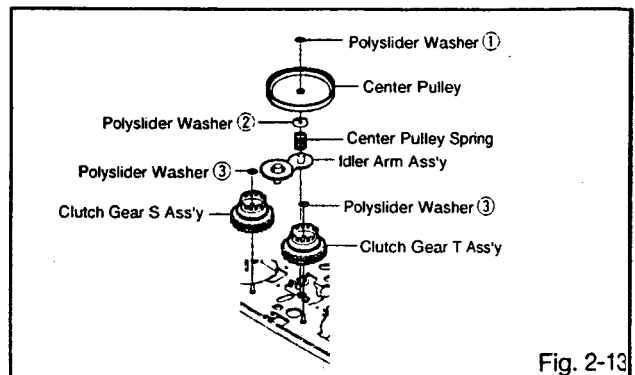
NOTE

When installing the Mode SW, align the timing position.



2-13: CENTER PULLEY (Refer to Fig. 2-13)

1. Remove the polyslider washer ①.
2. Remove the Center Pulley.
3. Remove the polyslider washer ②.
4. Remove the Center Pulley Spring.
5. Remove the Idler Arm Ass'y.
6. Remove the 2 polyslider washers ③.
7. Remove the Clutch Gear T Ass'y and Clutch Gear S Ass'y.



DISASSEMBLY INSTRUCTIONS

2-14: MAIN CAM (Refer to Fig. 2-14)

1. Remove the Loading Lever.
2. Remove the Main Brake Lever.
3. Remove the Capstan Brake Spring.
4. Remove the Capstan Brake Ass'y.
5. Remove the Main Rod Spring.
6. Remove the Tension Holder.
7. Remove the Tension Lever.
8. Remove the Main Cam.
9. Remove the Middle Gear.
10. Remove the Main Rod Ass'y.

NOTES

1. When installing the Main Rod Ass'y, install side (B) first, then install side (A).
2. When installing the Loading Lever, align the timing marks.

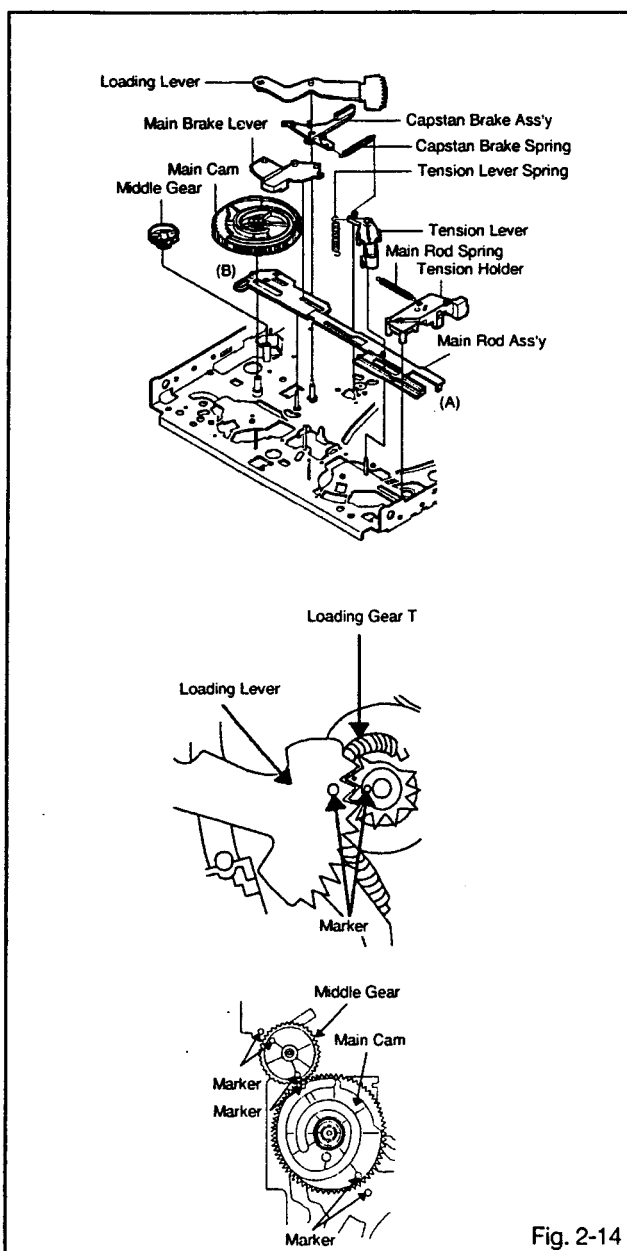


Fig. 2-14

2-15: CAPSTAN DD UNIT (Refer to Fig. 2-15)

1. Remove the screw ①.
2. Remove the screw ②.
3. Disconnect the CX4003 9 pins.
4. Remove the Deck Relay PCB.
5. Remove the 2 screws ③.
6. Remove the screw ④.
7. Remove the Capstan DD Unit.

NOTE

Use the specified screw to hold the Capstan DD Unit.

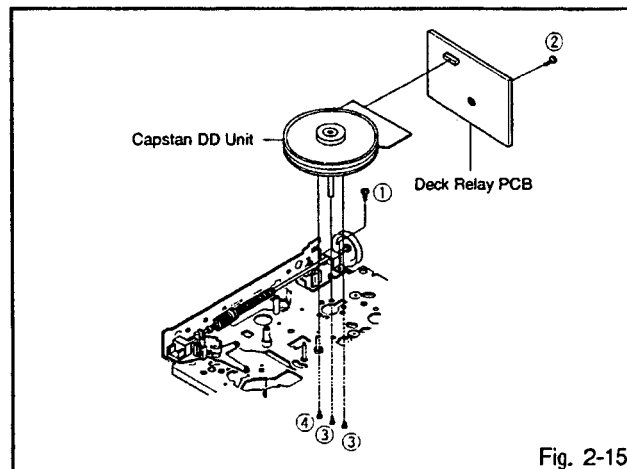


Fig. 2-15

2-16: INCLINED T ASS'Y / INCLINED S ASS'Y (Refer to Fig. 2-16)

1. Remove the 2 CS-Rings.
2. Remove the Inclined T Ass'y and Inclined S Ass'y.
3. Remove the Loading Gear T Ass'y.
4. Remove the Loading Gear S Ass'y.

NOTE

When installing the Inclined T Ass'y and Inclined S Ass'y, align the timing marks.

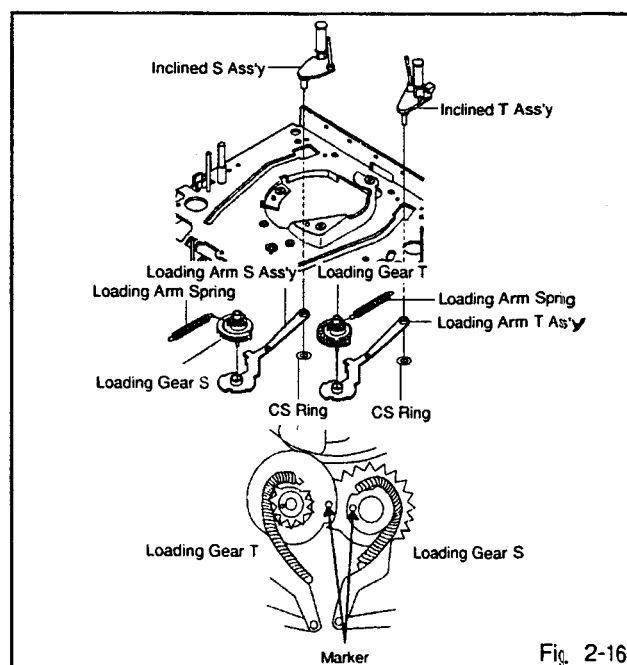


Fig. 2-16

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF ANODE CAP

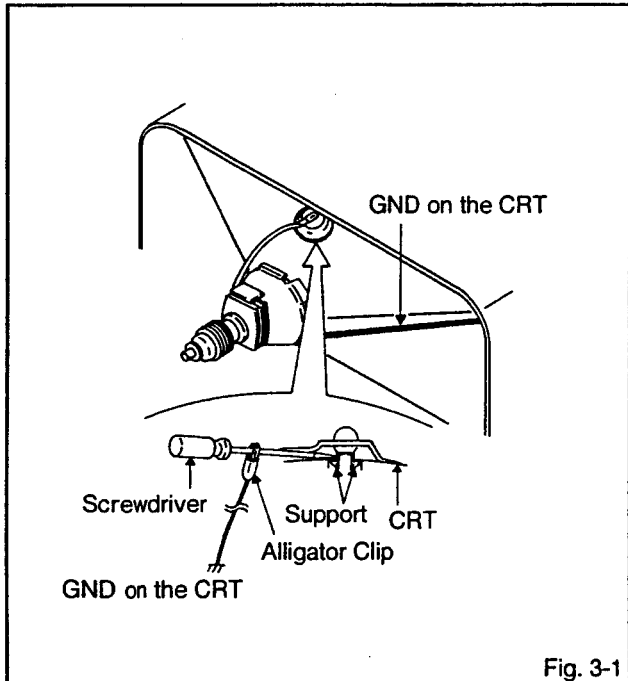
Read the following **NOTED** items before starting work.

- * After turning the power off there might still be a potential voltage that is very dangerous. When removing the Anode Cap, make sure to discharge the Anode Cap's potential voltage.
- * Do not use pliers to loosen or tighten the Anode Cap terminal, this may cause the spring to be damaged.

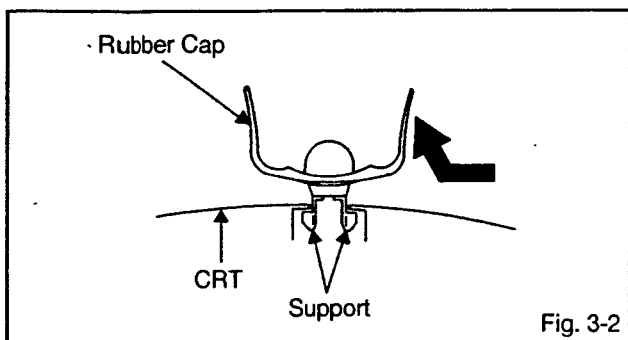
REMOVAL

1. Follow the steps as follows to discharge the Anode Cap.
(Refer to Fig. 3-1.)

Connect one end of an Alligator Clip to the metal part of a flat-blade screwdriver and the other end to ground. While holding the plastic part of the insulated Screwdriver, touch the support of the Anode with the tip of the Screwdriver. A cracking noise will be heard as the voltage is discharged.



2. Flip up the sides of the Rubber Cap in the direction of the arrow and remove one side of the support.
(Refer to Fig. 3-2.)



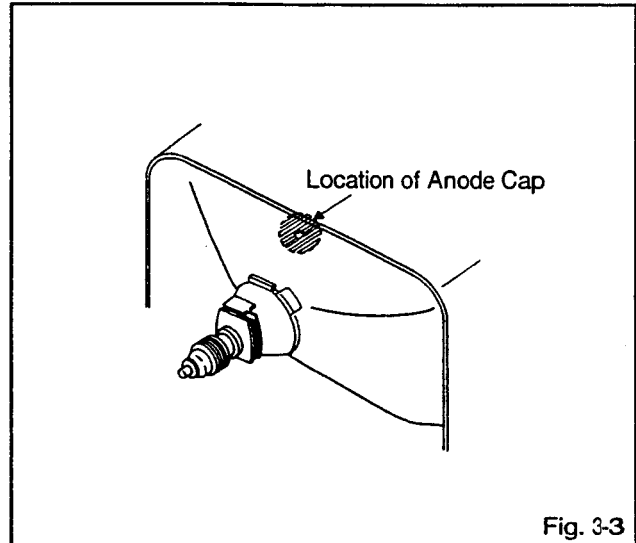
3. After one side is removed, pull in the opposite direction to remove the other.

NOTE

Take care not to damage the Rubber Cap.

INSTALLATION

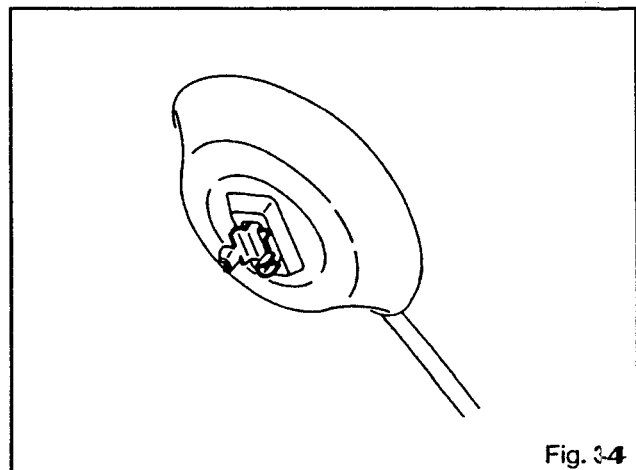
1. Clean the spot where the cap was located with a small amount of alcohol. (Refer to Fig. 3-3.)



NOTE

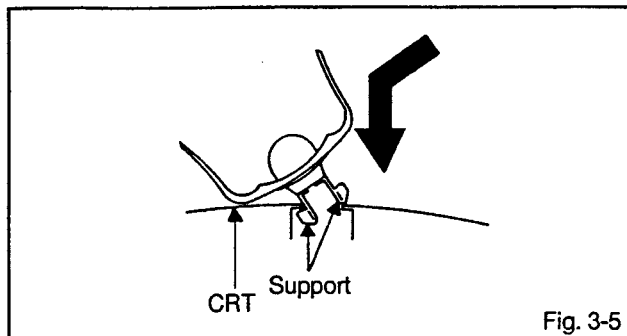
Confirm that there is no dirt, dust, etc. at the spot where the cap was located.

2. Arrange the wire of the Anode Cap and make sure the wire is not twisted.
3. Turn over the Rubber Cap. (Refer to Fig. 3-4.)



DISASSEMBLY INSTRUCTIONS

4. Insert one end of the Anode Support into the anode button, then the other as shown in Fig. 3-5.



5. Confirm that the Support is securely connected.
6. Put on the Rubber Cap without moving any parts.

4. REMOVAL OF DEFLECTION YOKE (Refer to Fig. 4-1)

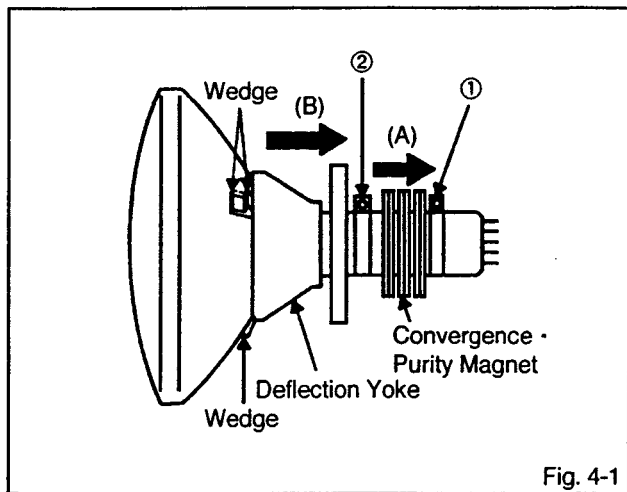
1. Loosen the screw ①.
2. Remove the Convergence • Purity Magnet in the direction of arrow (A).
3. Loosen the screw ②.
4. Remove the 3 Wedges.
5. Remove the Deflection Yoke in the direction of arrow (B).

INSTALLATION

Install new Deflection Yoke in reverse steps of REMOVAL.

NOTE

After adjusting the purity and the convergence, fix the screw ② and lock the wedges.



KEY TO ABBREVIATIONS

A	A/C	: Audio/Control	H.SW	: Head Switch	
	ACC	: Automatic Color Control	Hz	: Hertz	
	AE	: Audio Erase	I	IC	: Integrated Circuit
	AFC	: Automatic Frequency Control		IF	: Intermediate Frequency
	AFT	: Automatic Fine Tuning		IND	: Indicator
	AFT DET	: Automatic Fine Tuning Detect		INV	: Inverter
	AGC	: Automatic Gain Control	K	KIL	: Killer
	AMP	: Amplifier	L	L	: Left
	ANT	: Antenna		LED	: Light Emitting Diode
	A.PB	: Audio Playback		LIMIT AMP	: Limiter Amplifier
	APC	: Automatic Phase Control		LM, LDM	: Loading Motor
	ASS'Y	: Assembly		LP	: Long Play
	AT	: All Time		L.P.F	: Low Pass Filter
	AUTO	: Automatic		LUMI.	: Luminance
	A/V	: Audio/Video	M	M	: Motor
B	BGP	: Burst Gate Pulse		MAX	: Maximum
	BOT	: Beginning of Tape		MINI	: Minimum
	BPF	: Bandpass Filter		MIX	: Mixer, mixing
	BRAKE SOL	: Brake Solenoid		MM	: Monostable Multivibrator
	BUFF	: Buffer		MOD	: Modulator, Modulation
	B/W	: Black and White		MPX	: Multiplexer, Multiplex
C	C	: Capacitance, Collector		MS SW	: Mech State Switch
	CASE	: Cassette	N	NC	: Non Connection
	CAP	: Capstan		NR	: Noise Reduction
	CARR	: Carrier	O	OSC	: Oscillator
	CH	: Channel		OPE	: Operation
	CLK	: Clock	P	PB	: Playback
	CLOCK (SY-SE)	: Clock (Syscon to Servo)		PB CTL	: Playback Control
	COMB	: Combination, Comb Filter		PB-C	: Playback-Chrominance
	CONV	: Converter		PB-Y	: Playback-Luminance
	CPM	: Capstan Motor		PCB	: Printed Circuit Board
	CTL	: Control		P. CON	: Power Control
	CYL	: Cylinder		PD	: Phase Detector
	CYL-M	: Cylinder-Motor		PG	: Pulse Generator
	CYL SENS	: Cylinder-Sensor		P-P	: Peak-to Peak
D	DATA (SY-CE)	: Data (Syscon to Servo)	R	R	: Right
	dB	: Decibel		REC	: Recording
	DC	: Direct Current		REC-C	: Recording-Chrominance
	DD Unit	: Direct Drive Motor Unit		REC-Y	: Recording-Luminance
	DEMOD	: Demodulator		REEL BRK	: Reel Brake
	DET	: Detector		REEL S	: Reel Sensor
	DEV	: Deviation		REF	: Reference
E	E	: Emitter		REG	: Regulated, Regulator
	EF	: Emitter Follower		REW	: Rewind
	EMPH	: Emphasis		REV, RVS	: Reverse
	ENC	: Encoder		RF	: Radio Frequency
	ENV	: Envelope		RMC	: Remote Control
	EOT	: End of Tape		RY	: Relay
	EQ	: Equalizer	S	S. CLK	: Serial Clock
	EXT	: External		S. COM	: Sensor Common
F	F	: Fuse		S. DATA	: Serial Data
	FBC	: Feed Back Clamp		SEG	: Segment
	FE	: Full Erase		SEL	: Select, Selector
	FF	: Fast Forward, Flipflop		SENS	: Sensor
	FG	: Frequency Generator		SER	: Search Mode
	FL SW	: Front Loading Switch		SI	: Serial Input
	FM	: Frequency Modulation		SIF	: Sound Intermediate Frequency
	FSC	: Frequency Sub Carrier		SO	: Serial Output
	FWD	: Forward		SOL	: Solenoid
G	GEN	: Generator		SP	: Standard Play
	GND	: Ground		STB	: Serial Strobe
H	H.P.F	: High Pass Filter		SW	: Switch

KEY TO ABBREVIATIONS

S	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	TR	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	UNREG	:	Unregulated
V	V	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	X'TAL	:	Crystal
Y	Y/C	:	Luminance/Chrominance

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage. Unless maintenance is properly carried out, the following service intervals may be quite shortened as harmful effects may be had on other parts. Also, long term storage or misuse may cause transformation and aging of rubber parts.

Time Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	3,000 hours	Notes
Audio Control Head	■	■	■	■	■	Clean those parts in contact with the tape.
Full Erase Head	■	■	■	■	■	
Roding Motor Belt		■		●		
Reel Belt		■		●		Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	■	■	■	■ ●	
Capstan DD Unit					●	
Loading Motor					●	
Tension Band					●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	■ ●	■	■ ●	■ ●	Clean the Head.

● : Replace ■ : Clean

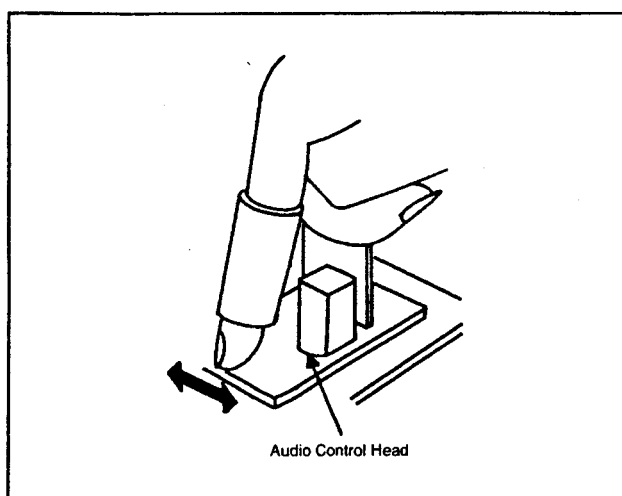
CLEANING

NOTE

- After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol and clean the audio control head by wiping it horizontally. Clean the full erase head in the same manner. (Refer to the figure below)



2. TAPE RUNNING SYSTEM

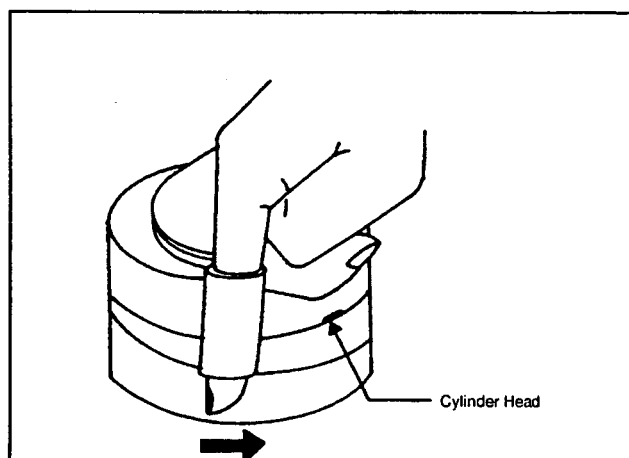
- When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

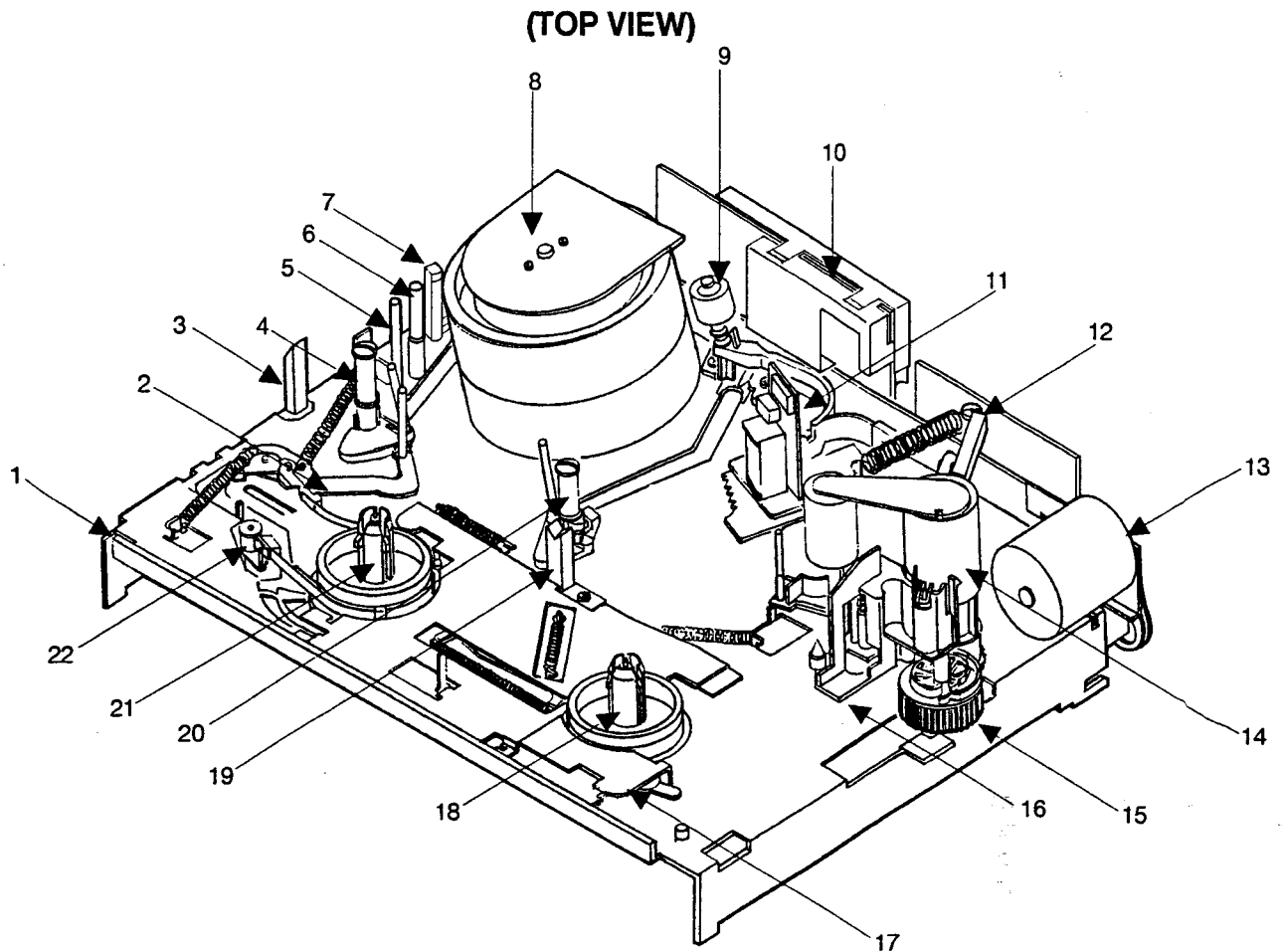
- Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). (Refer to the figure below)

NOTE

Do not exert force against the cylinder head. Do not move the chamois up or down since this can damage the head. Always use a piece of chamois for cleaning.

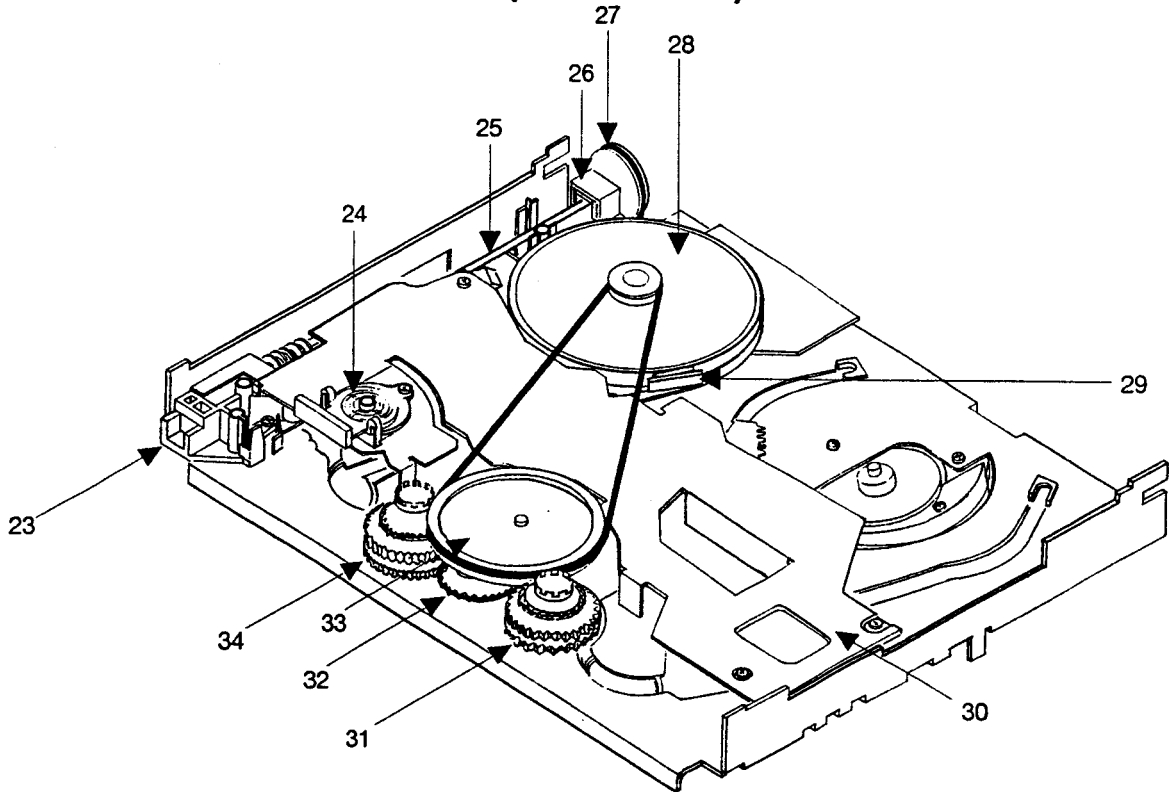


DECK PARTS LOCATIONS



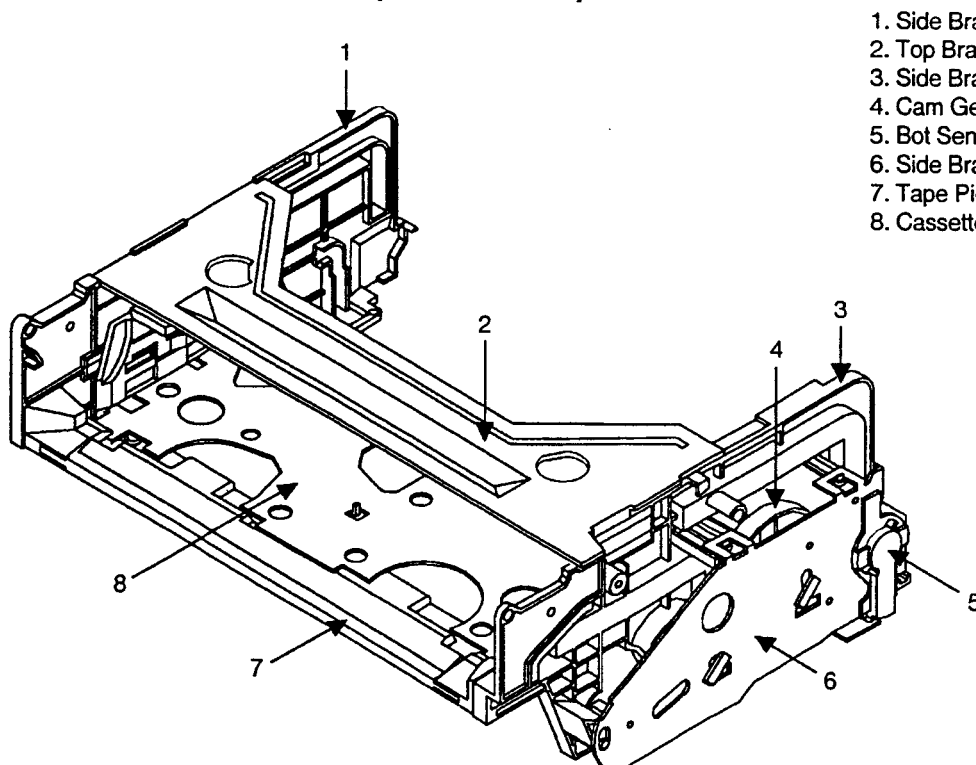
- | | |
|-------------------------|--------------------------|
| 1. Main Chassis | 13. Loading Motor |
| 2. Tension Arm Ass'y | 14. Pinch Roller Block |
| 3. EOT Reflector | 15. Cam Gear |
| 4. Guide Roller S Ass'y | 16. Cassette Opener |
| 5. P0 Post | 17. Brake Bracket |
| 6. P1 Post | 18. Reel |
| 7. FE Head | 19. LED Reflector |
| 8. Cylinder Unit | 20. Guide Roller T Ass'y |
| 9. Auto Head Cleaning | 21. Reel |
| 10. Head Amp PCB | 22. Tension Band Ass'y |
| 11. Audio/Control Head | |
| 12. Deck Relay PCB | |

DECK PARTS LOCATIONS (BOTTOM VIEW)



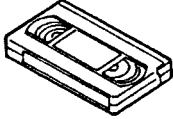

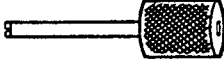

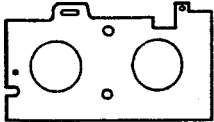
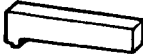
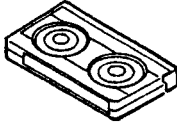
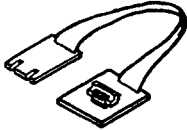
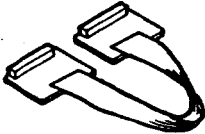
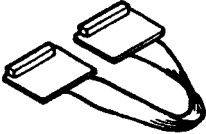

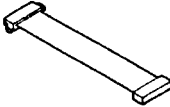
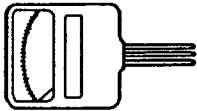
- | | |
|--------------------------|-------------------------|
| 23. Worm Bracket F Ass'y | 29. Capstan Brake Ass'y |
| 24. Mode Switch | 30. Bottom Plate |
| 25. Worm Ass'y | 31. Clutch Gear S Ass'y |
| 26. Worm Bracket R Ass'y | 32. Idler Arm Ass'y |
| 27. Loading Motor Belt | 33. Center Pulley |
| 28. Capstan DD Unit | 34. Clutch Gear T Ass'y |

(UNIT ASS'Y 2)



1. Side Bracket L
2. Top Bracket Ass'y
3. Side Bracket R Ass'y
4. Cam Gear Ass'y
5. Bot Sensor Cover
6. Side Bracket R2
7. Tape Piece Guide
8. Cassette Holder Ass'y

SERVICING FIXTURES AND TOOLS

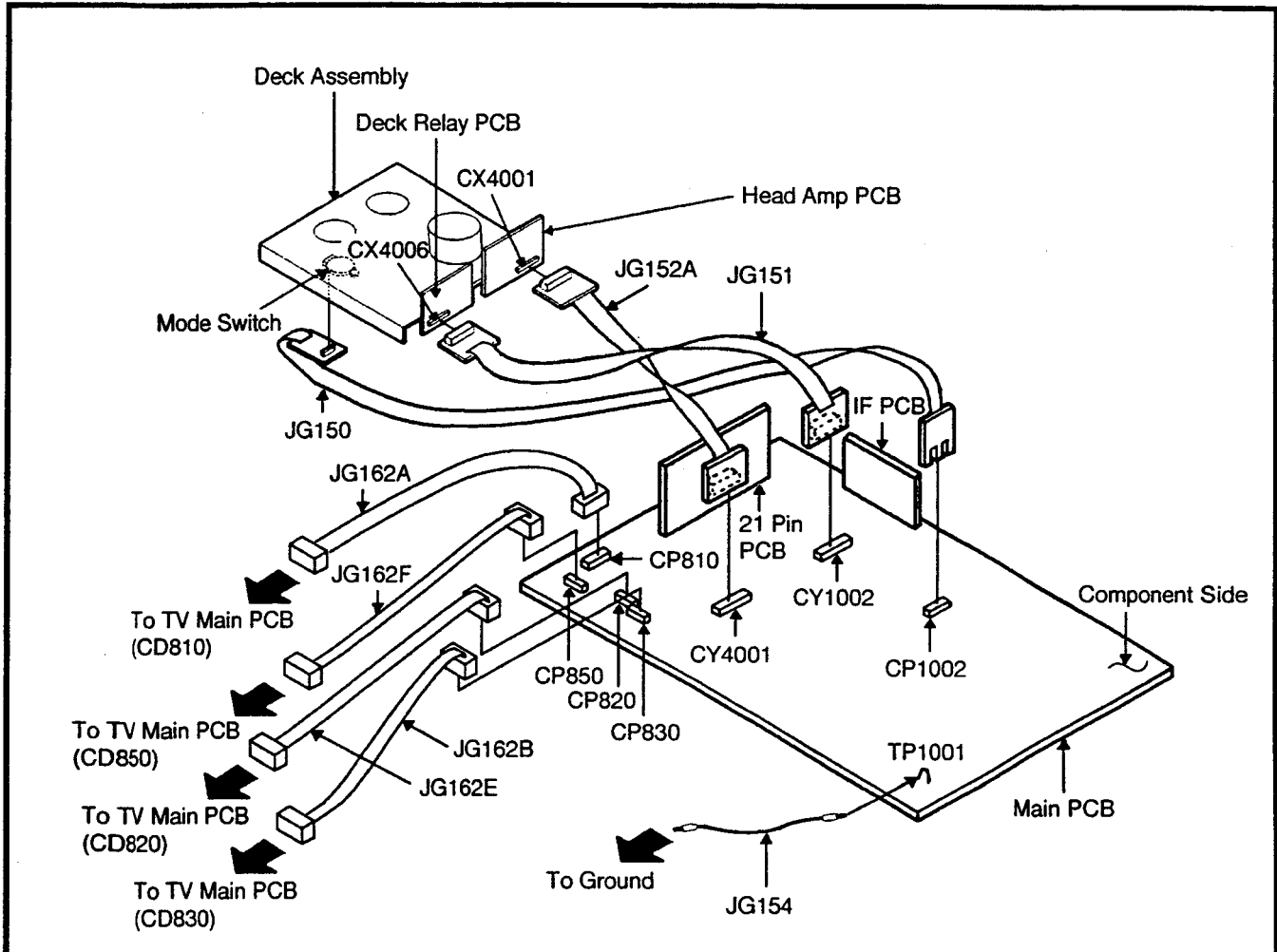
VHS Alignment Tape JG001E (VP1S-LI6 ³) JG001F (VP1S-C01 ³) 	JG002B Adapter JG002F Dial Torque Gauge (60~600gr/cm) JG002G (100~1200gr/cm) 	JG005 Post Adjustment Screwdriver 	JG153 X Value Adjustment Screwdriver 
JG022 Master Plane 	JG024 Reel Disk Height Adjustment Jig 	JG100A Torque Tape (VHT-063) 	JG150 Cable 
JG151 Cable 	JG152A Cable 	JG154 Cable 	JG162A Cable (8 Pin) JG162B Cable (9 Pin) JG162E Cable (12 Pin) JG162F Cable (13 Pin) 
Tentelometer 			

Part No.	Remarks
JG001E	Monoscope, 6KHz
JG001F	Color Bar, 1KHz
JG002F	Playback Take Up Torque
JG002G	Fast Forward Torque, Rewind Torque, Brake Torque (Take up Reel/Supply Reel)
JG005	Guide Roller Adjustment
JG153	X-Value Adjustment
JG022/JG024	Reel Disk Height Adjustment
JG100A	Playback Back Tension Torque
JG150	Used to connect the VCR MAIN PCB and MODE SWITCH
JG151	Used to connect the VCR MAIN PCB and DECK RELAY PCB
JG152A	Used to connect the VCR MAIN PCB and HEAD AMP PCB
JG154	Used to connect the test point of SERVICE and GROUND
JG162A/JG162B/ JG162E/JG162F	Used to connect the VCR MAIN PCB and TV MAIN PCB

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. Remove the VCR Main PCB from the Deck Chassis.
 2. Connect as shown in the below figure using the Service Fixture.
 - Connect the VCR Main PCB to the Mode Switch with the cable JG150.
 - Connect the VCR Main PCB to the Deck Relay PCB with the cable JG151.
 - Connect the VCR Main PCB to the Head Amp PCB with the cable JG152A.
 - Connect the VCR Main PCB to the TV Main PCB with the cables JG162A, JG162B, JG162E and JG162F.
 3. Short circuit between TP1001 and Ground with the cable JG154.
- (Refer to MAJOR COMPONENT LOCATION GUIDE)**
4. The EOT, BOT and Reel Sensor do not work at this moment.
 5. At that time, the STOP/EJECT button is available to insert and eject the Cassette Tape.



MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTED items before starting work.

- * Place an object which weighs between 350g and 500g on the Cassette Tape to keep it steady when you want to make the tape run without the Unit Ass'y 2. (Do not place an object which weighs over 500g.)
- * When you activate the deck without the Unit Ass'y 2, short circuit between TP1001 and Ground. In this condition the BOT/EOT sensor will not function.

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane (JG022) and reel disk height adjustment jig (JG024) on mechanism framework, taking care not to scratch the drum, as shown in Fig. 1-1-A.
3. Confirm that the reel disk is lower than "A" of the reel disk height adjustment jig (JG024) on the master plane and higher than "B" as shown in Fig. 1-1-B. If it is not, adjust to less than $7.5\text{mm} \pm 0.2\text{mm}$ with the height adjustment washer.
4. Perform the same adjustment for other reel.

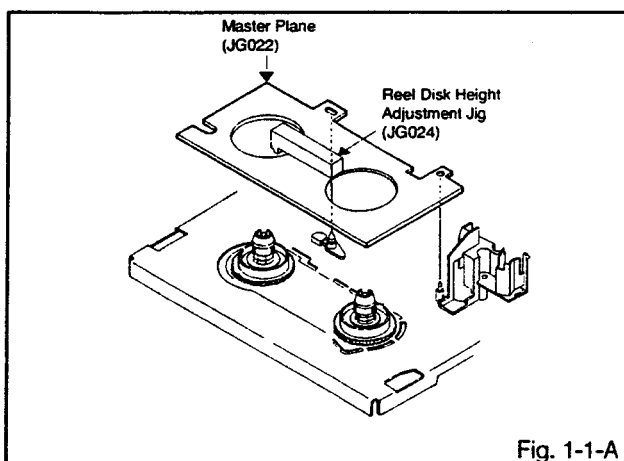


Fig. 1-1-A

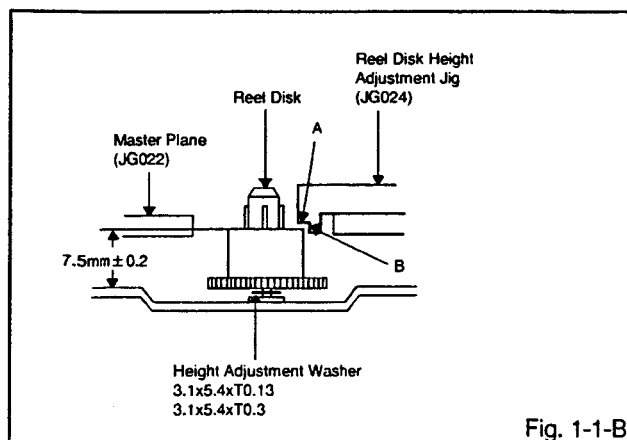


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Turn on the power and set to the PLAY mode adjust the Tension Adjust so that the Tension Post is at the position of $0.3\text{mm} \sim 0.5\text{mm}$ from the Rib. (Refer to Fig. 1-2)
2. Confirm that the video tape is not curling at the flange of P1 post or is not running on flanges.

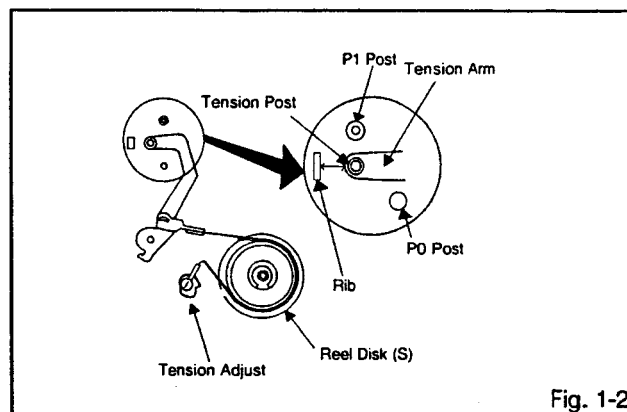


Fig. 1-2

1-3: CONFIRMATION AND ADJUSTMENT OF BACK TENSION ON PLAYBACK

1. Load a video tape recorded in standard speed mode. Set the unit to the PLAY mode.
 2. Install the tentelometer as shown in Fig. 1-3. Confirm the value is within $20 \sim 27\text{gr/cm}$ at this time.
- ※ IN CASE OF USING A CASSETTE TYPE TORQUE TAPE.
1. After adjustment, confirm and adjust the tension post position (Refer to item 1-2) for the tension arm, install the cassette type torque tape (JG100A) and set to the PLAY mode.
 2. Confirm that the left hand side tension value of the torque tape is $25 \sim 38\text{gr/cm}$ for the standard mode tape.

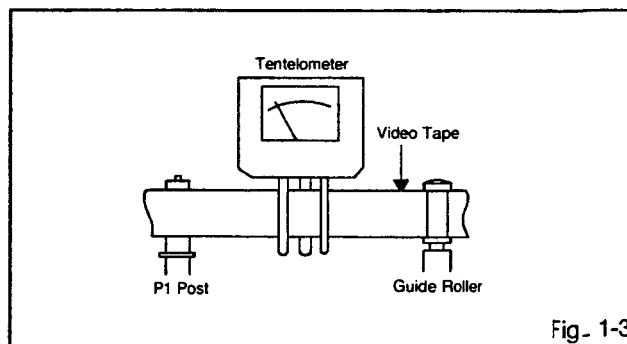


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF FAST FORWARD TORQUE

1. Set torque gauge (JG002G) on take-up reel disk, and place unit in FAST FORWARD mode. (Refer to Fig. 1-4)
2. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the FAST FORWARD button and the reel disk will begin to turn.

1-5: CONFIRMATION OF REWIND TORQUE

1. Operate within 4 or 5 seconds after the reel disk begins to turn.
2. Set torque gauge (JG002G) on supply reel disk, and place the unit in REWIND mode. (Refer to Fig. 1-4).
3. Confirm that torque is more than 400gr/cm.

NOTE

After setting the torque gauge on the reel disk, hold the gauge in place.
Push the REWIND button and the reel disk will begin to turn.

1-6: CONFIRMATION OF REEL BRAKE TORQUE

(Take-Up Reel Brake) (Refer to Fig. 1-4)

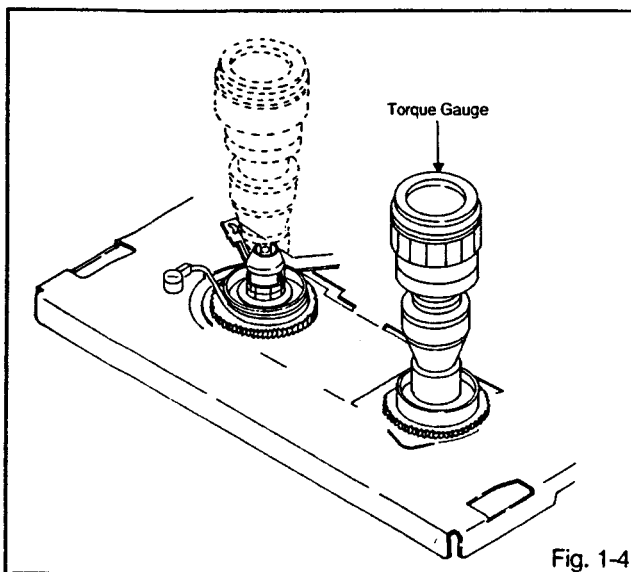
1. Set to STOP mode.
2. Set the torque gauge (JG002G) to the take-up reel and turn it counterclockwise.
3. Confirm that it is more than 200gr/cm at that time.

(Supply Reel Brake) (Refer to Fig. 1-4)

1. Set to STOP mode.
2. Set the torque gauge (JG002G) to the supply reel and turn it clockwise.
3. Confirm that it is more than 200gr/cm at that time.

NOTE

Separate the idler from the reel and confirm the brake torque.



NOTE

If the torque value checked is out of tolerance, replace the appropriate parts as follows.

Check Items	Replace Parts
1-4	Idler Ass'y or Clutch ASS'Y
1-5	Idler Ass'y or Clutch ASS'Y
1-6	Main Brake T Ass'y or Main Brake S Ass'y

2. TAPE RUNNING CONFIRMATION AND ADJUSTMENT

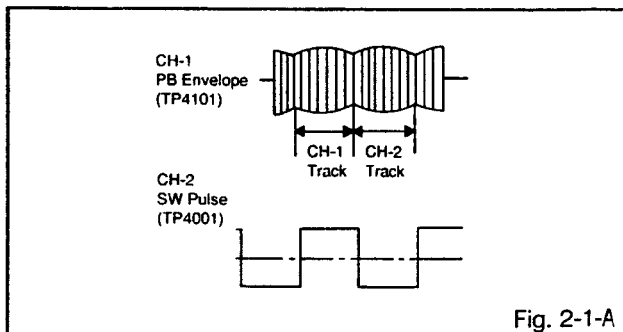
Tape running is adjusted precisely at the factory. Normally, it is not necessary to make adjustments. It is necessary to confirm and make adjustments when the parts of the tape running mechanism are replaced because of extensive usage or failure.

2-1: GUIDE ROLLER

1. Connect CH-1 on the oscilloscope to TP4101 (PB Envelope) and CH-2 to TP4001 (SW Pulse).
2. Set the tracking to manual center position in the following way. Hold and press the tracking auto button more than 2 seconds to set the tracking to center position.
3. Trigger with SW pulse and observe the envelope. (Refer to Fig. 2-1-A)
4. Adjust the guide roller height while observing the envelope, and make the envelope flat. Adjust the envelope so that the flatness will not be affected even when the tracking control button is pressed. (Use the adjustment screwdriver JG005).
5. Press and hold the tracking control button and (at the point that the envelope waveform starts to reduce) adjust the envelope so that the A : B ratio is better than 3 : 2. (Refer to Fig. 2-1-B)
6. Adjust the PG shifter (ELECTRICAL ADJUSTMENTS : ITEM 3-1) in the PLAY mode.

NOTE

After adjustment, confirm and adjust A/C head tilt. (Refer to item 2-2)



MECHANICAL ADJUSTMENTS

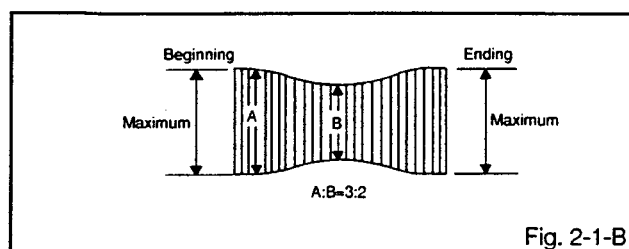


Fig. 2-1-B

2-2: CONFIRMATION AND ADJUSTMENT OF A/C HEAD TILT

When the tape is running abnormally, perform the following adjustments.

1. Insert a new tape and play it back.
2. Confirm that there is no crease on the tape between the P4 post and guide roller (R) and the tape is running smoothly. (It is absolutely impossible to get satisfactory sound if the tape is distorted between the A/C head and P4 post.)
3. If the tape still does not run smoothly, turn the screw ① and adjust the tilt of the A/C head. (Refer to Fig. 2-2)

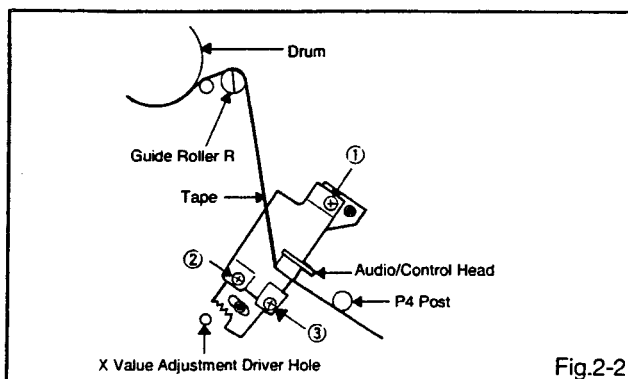


Fig.2-2

2-3: ADJUSTMENT OF A/C HEAD HEIGHT AND AZIMUTH

1. Playback a VHS alignment tape (**JG001E**) and observe the waveform at the audio output terminal.
2. Turn the screw ② slowly to change the azimuth of the A/C head. Adjust the height so that the audio output becomes maximum. (**Refer to Fig. 2-2**)
3. Adjust the screw ③, (**Refer to Fig. 2-2**) until the height of the A/C head reaches the position against the tape as shown in **Fig. 2-3**.
4. When the control head height is not fit. (When you must turn the screw more than 45 degrees), Turn all of the screws ①, ② and ③ to the same degrees.
Then confirm the angle of the audio/control head and adjust again.

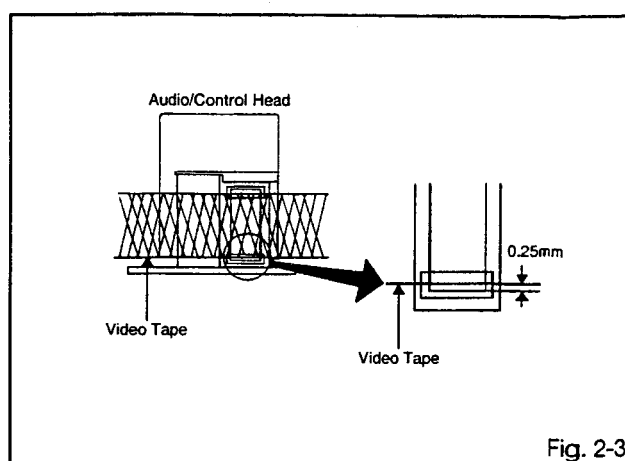


Fig. 2-3

2-4: TAPE RUNNING ADJUSTMENT

1. Adjust the height of reel disk.
(Refer to item 1-1)
2. Confirm and adjust tension post position.
(Refer to item 1-2)
3. Adjust the guide roller.
(Refer to item 2-1)
4. Adjust the A/C head tilt.
(Refer to item 2-2)
5. Adjust the A/C head height and azimuth.
(Refer to item 2-3)
6. Connect CH-1 on the oscilloscope to **TP4001** and CH-2 to **TP4101**. Playback the VHS alignment tape (**JG001E**). Set the tracking to manual center. Adjust X with the screw driver for X (**JG153**) as the **Fig. 2-1-A** and **Fig. 2-1-B**.
(Refer to No. 2 of the item 2-1).

ELECTRICAL ADJUSTMENTS

(VCR SECTION)

3. ADJUSTMENT PROCEDURE

Read and perform these adjustments when repairing the circuits or replacing electrical parts or PCB assemblies.

CAUTION

When replacing IC's or transistors, use only specified silicon grease (YG6260M).
(To prevent the damage to IC's and transistors.)

3-1: PG SHIFTER (HEAD SWITCHING) ADJUSTMENT (Using Customer Remote Control)

CONDITIONS

MODE-PLAYBACK

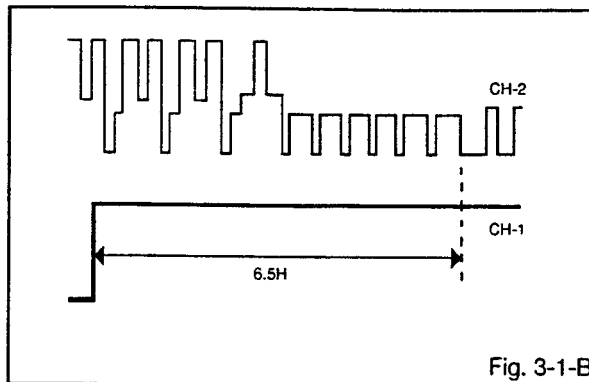
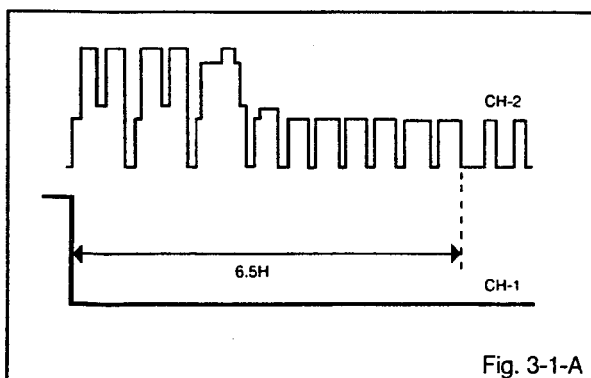
Input Signal-Alignment Tape (JG001F) or Similar

INSTRUCTIONS

1. Playback the alignment tape. (JG001F)
2. Set the volume level to minimum after unplugging the power cord once from the AC source in order to set the TV/VCR to the reset mode.
3. Press the VOL. DOWN button on the set and the Channel button (3) on the remote control simultaneously until the indicator REC disappears. If the indicator REC disappears, adjustment is completed.

(If the REC indicator is still illuminated)

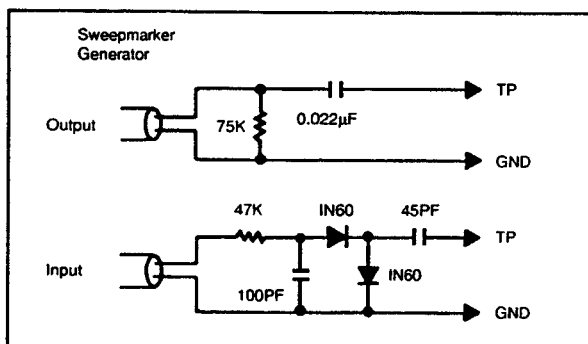
1. Connect CH-1 on the oscilloscope to TP4001 and CH-2 to Pin 3 of CP4501.
2. Playback the alignment tape. (JG001F)
4. Press the VOL. DOWN button on the set and the Channel button (4) on the remote control simultaneously.
5. Adjust the Tracking +/- key so that the waveform of the oscilloscope measures $6.5 \pm 0.5(H)$ at both leading and trailing edges. (Refer to Fig. 3-1-A, B)
6. Press the Tracking Auto key.



3-2: VCO

NOTE

For adjusting of VCO, connect input and output terminals of sweepmarker generator to the circuit as shown below, then adjust it.

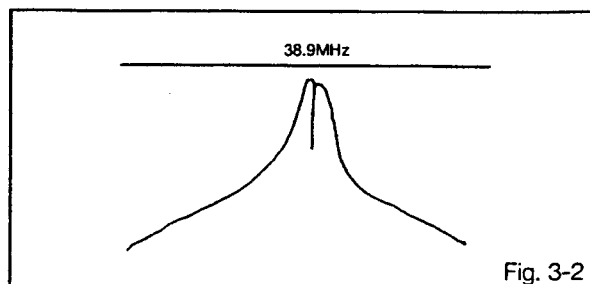


CONDITION

MODE-STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to pin 5 of IC6001.
2. Connect the input of sweepmarker generator to pin 17 of IC6001.
3. Connect a 10K ohm variable resistor to IF AGC terminal (pin 4 of IC6001), 5V line and ground, then adjust to make the waveform of the oscilloscope readable.
4. Adjust L6011 until the waveform marker (38.9MHz) becomes as shown in Fig. 3-2.



ELECTRICAL ADJUSTMENTS

3-3: AFT

CONDITION

MODE-STOP

INSTRUCTIONS

1. Connect the output of sweepmarker generator to **pin 5 of IC6001**.
2. Connect the input of sweepmarker generator to **pin 4 of CP6001**.
3. Adjust **L6012** until the waveform marker (38.9MHz) becomes as shown in **Fig. 3-3**.
4. Disconnect the sweepmaker generator and the oscilloscope.
5. Connect the generator (38.9MHz) to the **pin 4 of CP6115** through 2.2K ohm and connect the DC voltmeter to **pin 3 of CP6115**.
6. Adjust **L6012** until the DC voltage is $4.0V \pm 0.1V$.

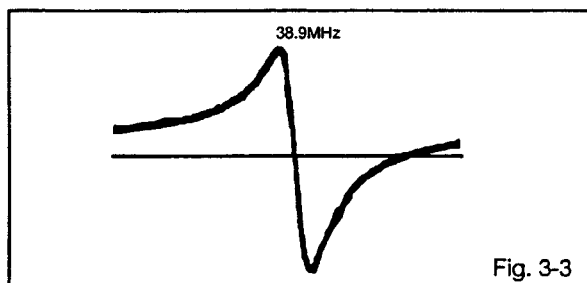


Fig. 3-3

3-4: TRAP

CONDITION

MODE-TUNER MODE

INSTRUCTIONS

1. Connect the output of sweepmaker generator to **pin 11 of CP6001**.
2. Connect the oscilloscope to **pin 1 of CP6004**.
3. Adjust **L6013** until the waveform marker (31.9MHz) becomes as shown in **Fig. 3-4**.

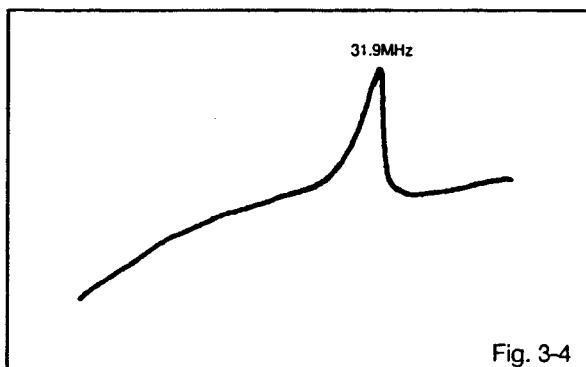


Fig. 3-4

3-5: RF AGC

On-Screen Display Adjustment

Do not set the CLOCK, and sound to minimum.
Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously to appear the adjustment mode on the screen as shown in **Fig. 3-5**.

NOTE

Use the 1 - 7 keys on the remote control to select the options.
Press the 8 key to end the adjustments.

ADJUSTMENT MODE (TV)

1. AGC/BRI/COL AUTO
2. SUB BRIGHT AUTO
3. AGC MANUAL
4. COLOR MANUAL
5. CONTRAST MANUAL
6. BRIGHT MANUAL
7. V. POSI MANUAL
8. END

Fig. 3-5

1. Connect the DC voltmeter to **pin 2 of CP6115**.
2. Activate the adjustment mode display and press the 3 key.
3. Press the VOL. UP/DOWN key on the remote control until the DC voltage is $3.2V \pm 0.1V$.

ELECTRICAL ADJUSTMENTS

(TV SECTION)

4. BASIC ADJUSTMENTS

On-Screen Display Adjustment

Do not set the CLOCK, and sound to minimum. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously to appear the adjustment mode on the screen as shown in Fig. 4-1, 4-2 and 4-3.

NOTE

Use the 1 - 7 keys on the remote control to select the options.

Press the 8 key to end the adjustments.

- ADJUSTMENT MODE (TV)
1. AGC/BRI/COL AUTO
 2. SUB BRIGHT AUTO
 3. AGC MANUAL
 4. COLOR MANUAL
 5. CONTRAST MANUAL
 6. BRIGHT MANUAL
 7. V. POSI MANUAL
 8. END

Fig. 4-1

- ADJUSTMENT MODE (WIDE)
1. FULL
 2. SMOOTH
 3. NORMAL
 4. H CORR
 5. V CORR
 6. CORNER CORR
 7. TRAPEZOID DIS
 8. END

Fig. 4-2

- ADJUSTMENT MODE (AUX)
1. BRI/COL AUTO
 2. SUB BRIGHT AUTO
 - 3.
 4. COLOR MANUAL
 5. CONTRAST MANUAL
 6. BRIGHT MANUAL
 - 7.
 8. END

Fig. 4-3

4-1: CONSTANT VOLTAGE

1. Receive the monochrome pattern.
2. Using the remote control, set the brightness and contrast to minimum position.
3. Connect the digital voltmeter to TP501.
4. Adjust the VR501 until the DC voltage is $135V \pm 2V$.

4-2: CUT OFF

1. Receive the color bar pattern.
2. Change the wide screen mode to EXPAND.
3. Using the remote control, set brightness and contrast to minimum position.
4. Connect the oscilloscope to TP802.
5. Adjust the screen volume until the voltage is 140V DC. (Refer to Fig. 4-4)

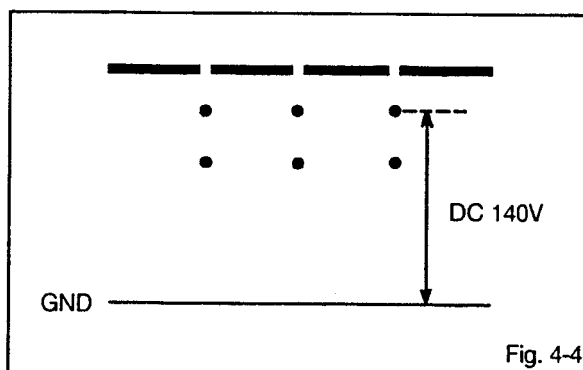


Fig. 4-4

4-3: VERTICAL POSITION

1. Receive the color bar pattern.
2. Activate the adjustment mode display and press the 7 key. (Refer to Fig. 4-1)
3. Press the VOL. UP/DOWN key on the remote control until horizontal line of the color bar comes to approximately the center of the CRT.

4-4: HORIZONTAL POSITION

1. Receive the color bar pattern.
2. Change the wide screen mode to SMOOTH.
3. Adjust VR601 until the color width of both screen edges are equal.
4. Receive broadcasting signal, then confirm picture is normal.

4-5: FOCUS

1. Receive the broadcasting signal.
2. Change the wide screen mode to FULL.
3. Adjust the focus volume until picture is distinct.

4-6: BRIGHT (TV)

1. Receive the monochrome pattern. (RF Input)
2. Change the wide screen mode to EXPAND.
3. Activate the adjustment mode display (TV) and press the 6 key. (Refer to Fig. 4-1)
4. Press the VOL. UP/DOWN key on the remote control until 0% of gray scale will begins to lighten.

4-7: COLOR (TV)

1. Receive the color bar pattern. (RF Input)
2. Connect the oscilloscope to TP801.
3. Change the wide screen mode to EXPAND.
4. Activate the adjustment mode display (TV) and press the 4 key. (Refer to Fig. 4-1)
5. Press the VOL. UP/DOWN key on the remote control until the red color level is adjusted to 80% of the white level. (Refer to Fig. 4-5)

ELECTRICAL ADJUSTMENTS

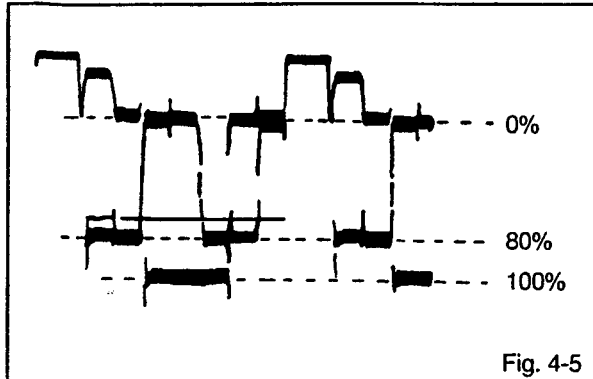


Fig. 4-5

4-8: BRIGHT (AUX)

1. Receive the monochrome pattern. (21 PIN Input)
2. Change the wide screen mode to EXPAND.
3. Activate the adjustment mode display (AUX) and press the 6 key. (Refer to Fig. 4-3)
4. Press the VOL. UP/DOWN key on the remote control until 0% of gray scale will begins to lighten.

4-9: COLOR (AUX)

1. Receive the color bar pattern. (21 PIN Input)
2. Connect the oscilloscope to TP801.
3. Change the wide screen mode to EXPAND.
4. Activate the adjustment mode display (AUX) and press the 4 key. (Refer to Fig. 4-3)
5. Press the VOL. UP/DOWN key on the remote control until the red color level is adjusted to 80% of the white level. (Refer to Fig. 4-5)

4-10: FULL MODE (H. SIZE, V. SIZE, PARABOLA)

1. Receive the monochrome pattern.
2. Activate the adjustment mode display (WIDE) and press the 1 key. (Refer to Fig. 4-2)
3. Press the 1 key. (Refer to Fig. 4-6)
4. Press the VOL. UP/DOWN key on the remote control until the horizontal overscan is $9\% \pm 1\%$.
5. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
6. Press the 3 key. (Refer to Fig. 4-6)
7. Press the VOL. UP/DOWN key on the remote control until the vertical overscan is $8\% \pm 2\%$.
8. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
9. Press the 2 key. (Refer to Fig. 4-6)
10. Press the VOL. UP/DOWN key on the remote control until the vertical line is straight.

FULL
1. H. SIZE
2. PARABOLA
3. V. SIZE

Fig. 4-6

4-11: SMOOTH MODE (H. SIZE, V. SIZE, PARABOLA)

1. Receive the monochrome pattern.
2. Activate the adjustment mode display (WIDE) and press the 2 key. (Refer to Fig. 4-2)
3. Press the 1 key. (Refer to Fig. 4-7)
4. Press the VOL. UP/DOWN key on the remote control until the horizontal overscan is $9\% \pm 1\%$.
5. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
6. Press the 3 key. (Refer to Fig. 4-7)
7. Press the VOL. UP/DOWN key on the remote control until the vertical overscan is $15\% \pm 2\%$.
8. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
9. Press the 2 key. (Refer to Fig. 4-7)
10. Press the VOL. UP/DOWN key on the remote control until the vertical line is straight.

SMOOTH
1. H. SIZE
2. PARABOLA
3. V. SIZE

Fig. 4-7

4-12: NORMAL MODE (H. BLANKING, H. SIZE, V. SIZE, PARABOLA)

1. Receive the monochrome pattern.
2. Activate the adjustment mode display (WIDE) and press the 1 key. (Refer to Fig. 4-2)
3. Press the 1 key. (Refer to Fig. 4-8)
4. Adjust VR751 until the horizontal overscan is 9%.
5. Press the VOL. UP/DOWN key on the remote control until the picture size is $320\text{mm} \pm 5\text{mm}$.
6. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
7. Press the 3 key. (Refer to Fig. 4-8)
8. Press the VOL. UP/DOWN key on the remote control until the vertical overscan is $8\% \pm 2\%$.
9. Press the VOL. DOWN key on the set and the 9 key on the remote control simultaneously.
10. Press the 2 key. (Refer to Fig. 4-8)
11. Press the VOL. UP/DOWN key on the remote control until the vertical line is straight.

NORMAL
1. H. SIZE
2. PARABOLA
3. V. SIZE

Fig. 4-8

ELECTRICAL ADJUSTMENTS

4-13: CORNER CORR

1. Receive the cross hatch pattern.
2. Change the wide screen mode to SMOOTH.
3. Activate the adjustment mode display (WIDE) and press the 6 key. **(Refer to Fig. 4-2)**
4. Press the VOL. UP/DOWN key on the remote control until the both ends of the vertical lines are straight.

4-14: TRAPEZOID DIS

1. Receive the cross hatch pattern.
2. Change the wide screen mode to SMOOTH.
3. Activate the adjustment mode display (WIDE) and press the 7 key. **(Refer to Fig. 4-2)**
4. Press the VOL. UP/DOWN key on the remote control until the both vertical lines of the screen become parallel.

ELECTRICAL ADJUSTMENTS

5. PURITY AND CONVERGENCE ADJUSTMENT

NOTE

1. Turn the unit on and let it warm up for at least 30 minutes before performing the following adjustments.
2. Place the CRT surface facing east or west to reduce the terrestrial magnetism.
3. Turn ON the unit and demagnetize with a Degauss Coil.

5-1: STATIC CONVERGENCE (ROUGH ADJUSTMENT)

1. Tighten the screw for the magnet. Refer to the adjusted CRT for the position. **(Refer to Fig. 5-1)**
If the deflection yoke and magnet are in one body, untighten the screw for the body.
2. Receive the green raster pattern from color bar generator.
3. Slide the deflection yoke until it touches the funnel side of the CRT.
4. Adjust center of screen to green, with red and blue on the sides, using the pair of purity magnets.
5. Switch the color bar generator from the green raster pattern to the crosshatch pattern.
6. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
7. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.
8. Adjust the crosshatch pattern to change to white by repeating steps 6 and 7.

5-2: PURITY

NOTE

Adjust after performing adjustments in section 5-1.

1. Receive the green raster pattern from color bar generator.
2. Adjust the pair of purity magnets to center the color on the screen.
Adjust the pair of purity magnets so the color at ends are equally wide.
3. Move the deflection yoke backward (To neck side) slowly, and stop it at the position when the whole screen is green.
4. Confirm red and blue colors.
5. Adjust the slant of the deflection yoke while watching the screen, then tighten the fixing screw.

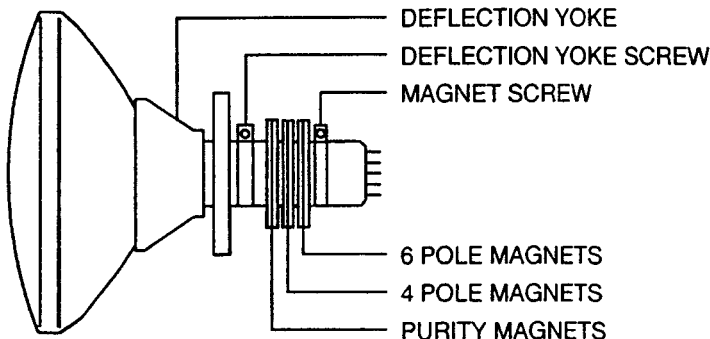


Fig. 5-1

5-3: STATIC CONVERGENCE

NOTE

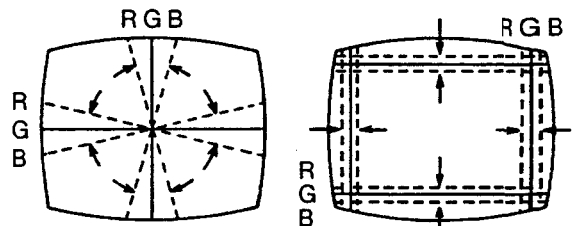
1. Receive the crosshatch pattern from color bar generator.
2. Combine red and blue of the 3 color crosshatch pattern on the center of the screen by adjusting the pair of 4 pole magnets.
3. Combine red/blue (magenta) and green by adjusting the pair of 6 pole magnets.

5-4: DYNAMIC CONVERGENCE

NOTE

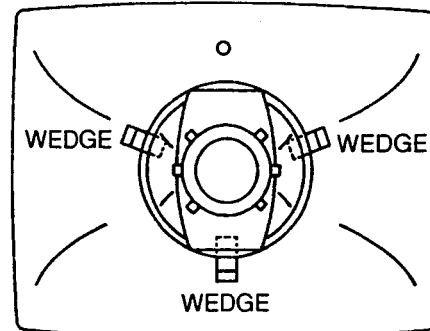
Adjust after performing adjustments in section 5-3.

1. Adjust the differences around the screen by moving the deflection yoke upward/downward and right/left. **(Refer to Fig. 5-2-a)**
2. Insert three wedges between the deflection yoke and CRT funnel to fix the deflection yoke. **(Refer to Fig. 5-2-b)**



UPWARD/DOWNWARD SLANT RIGHT/LEFT SLANT

Fig. 5-2-a

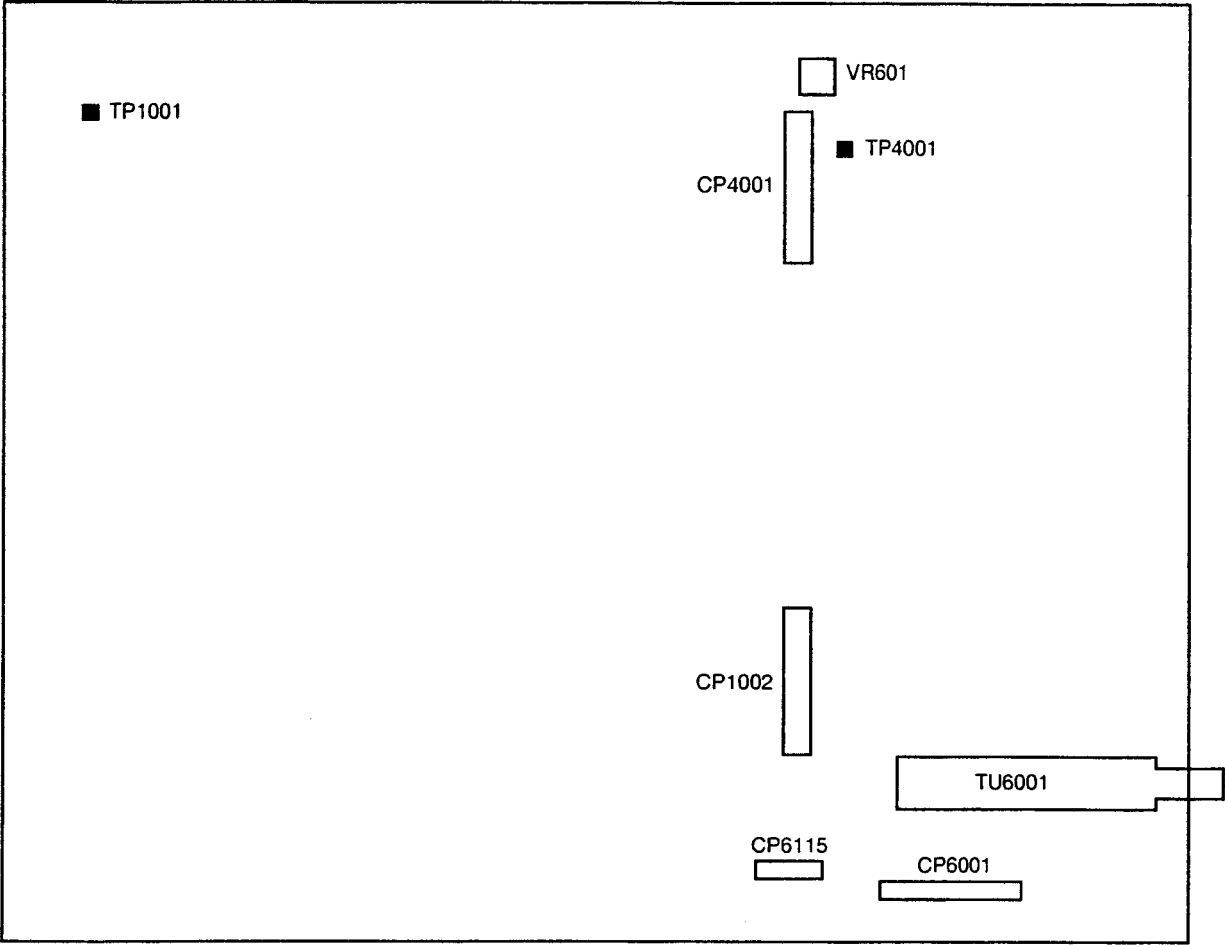


WEDGE POSITION

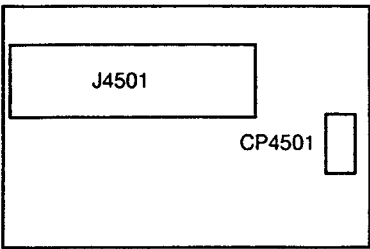
Fig. 5-2-b

MAJOR COMPONENTS LOCATION GUIDE

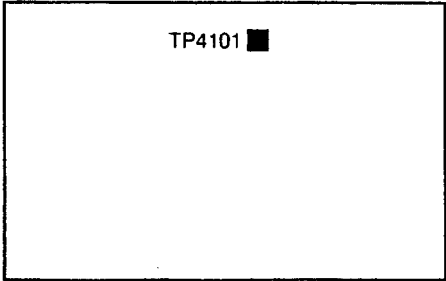
(VCR SECTION)



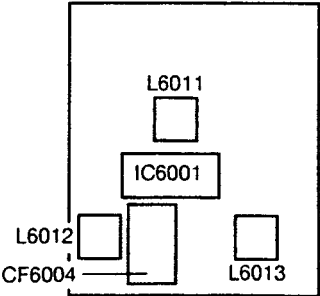
MAIN



21 PIN



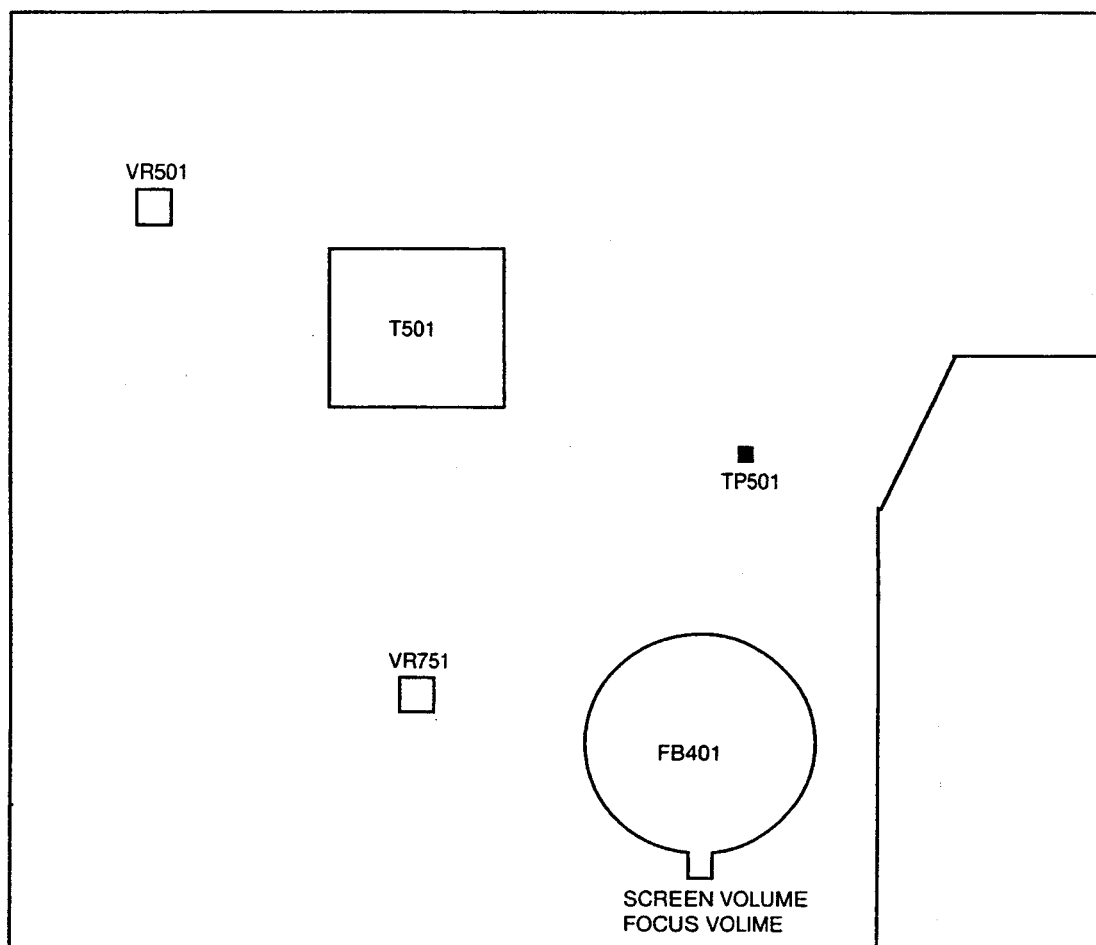
HEAD AMP



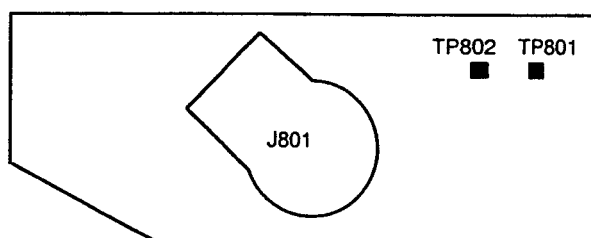
IF

MAJOR COMPONENTS LOCATION GUIDE

(TV SECTION)

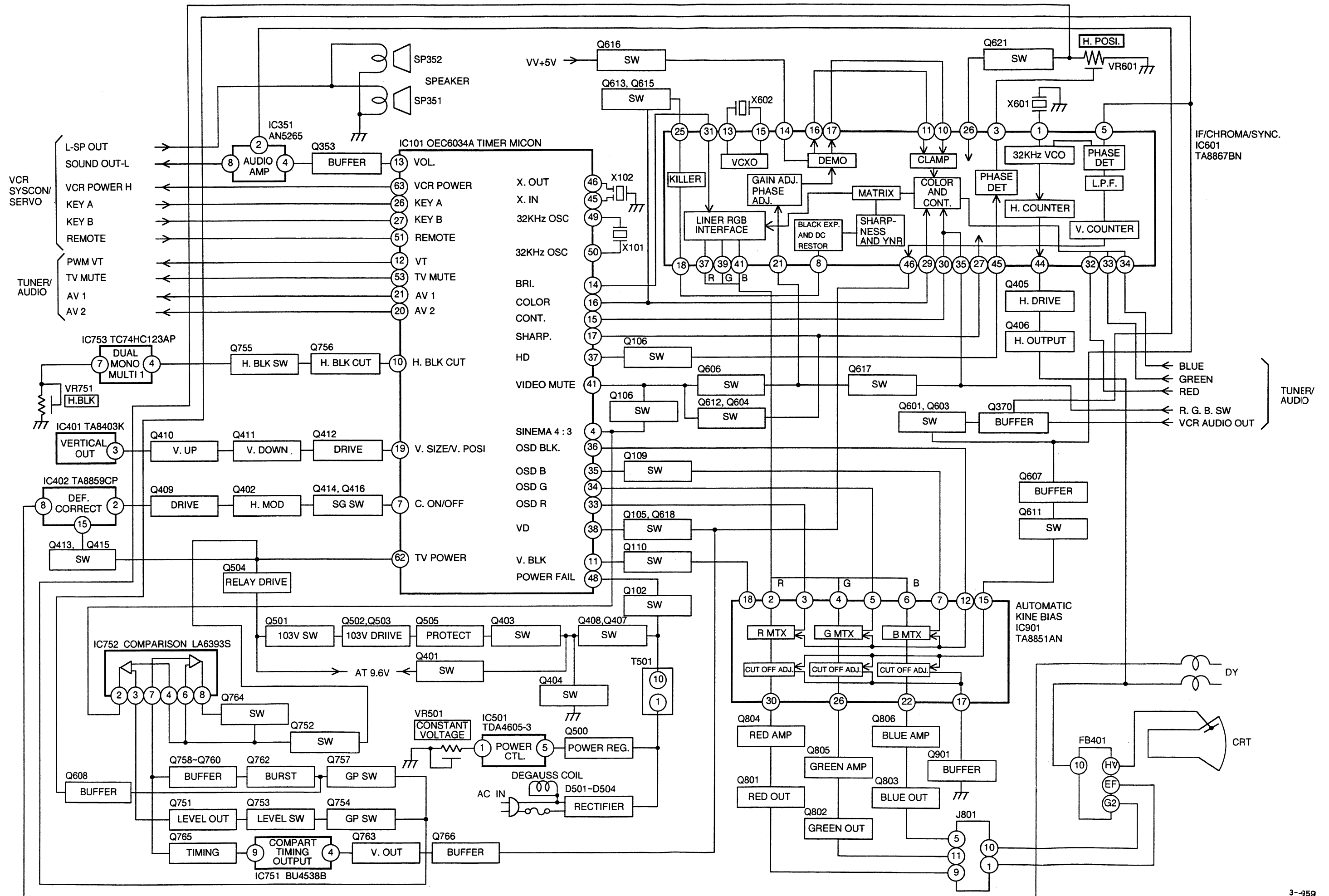


MAIN

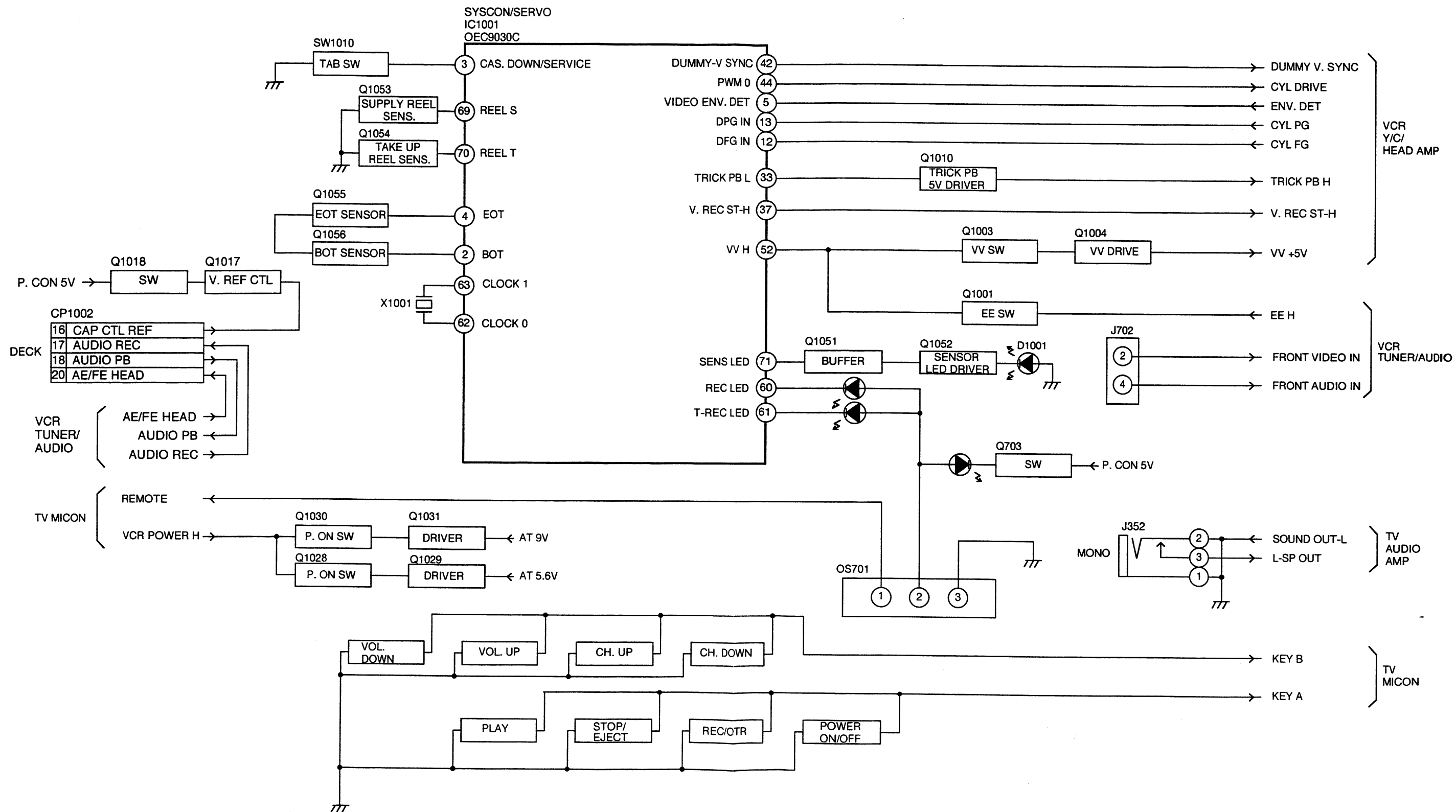


CRT

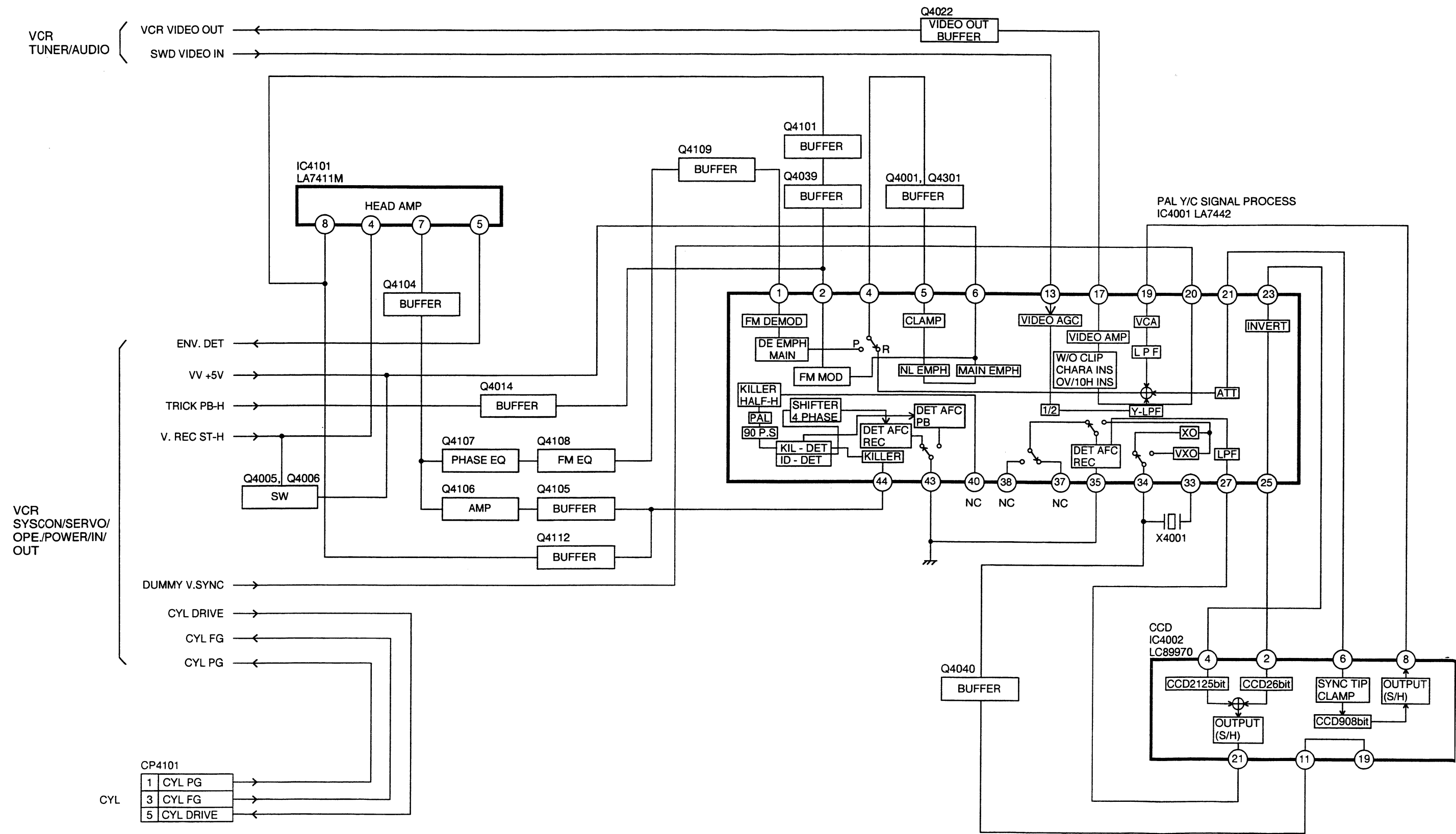
TV BLOCK DIAGRAM



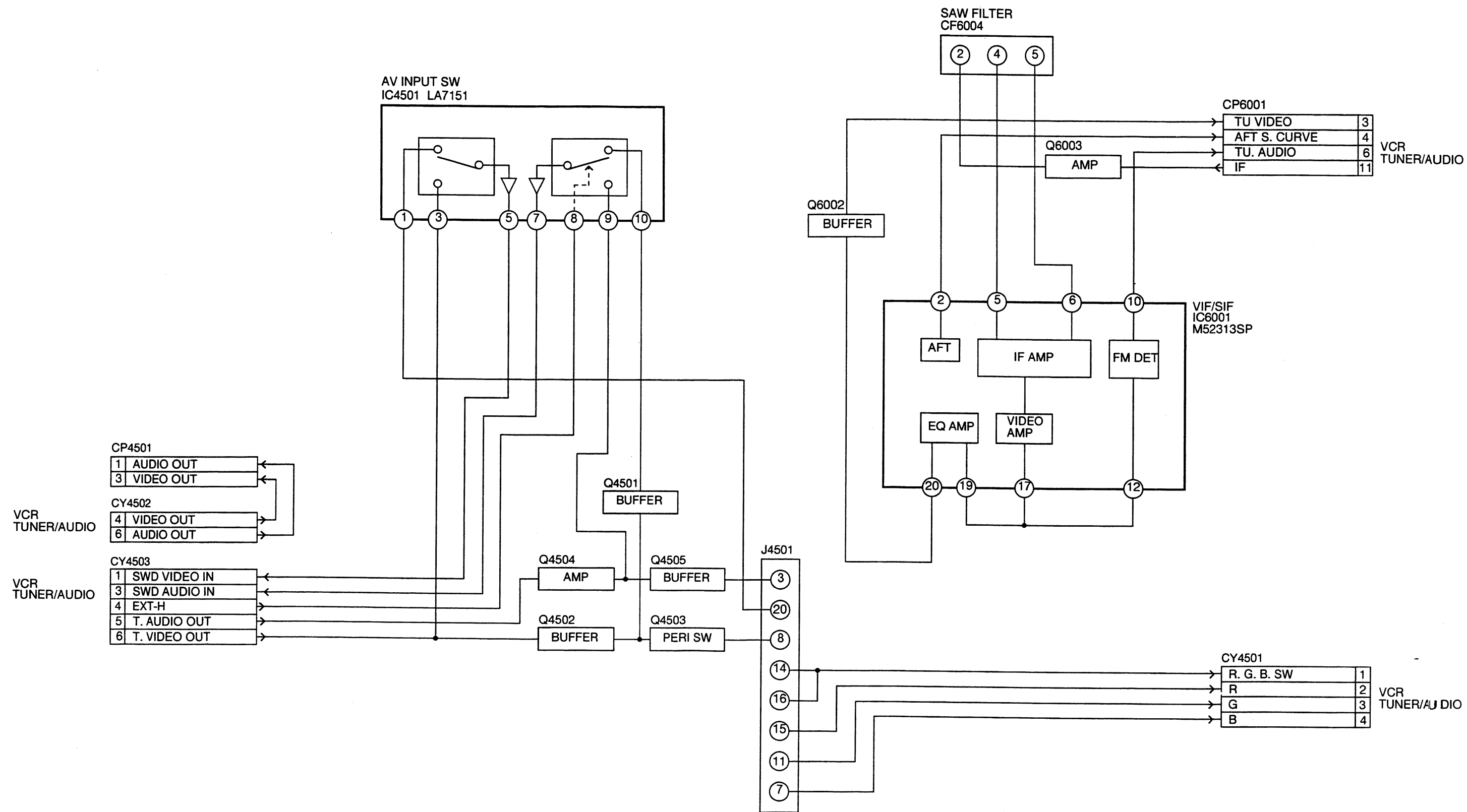
VCR SYSCON/SERVO/OPERATION/POWER/IN/OUT BLOCK DIAGRAM



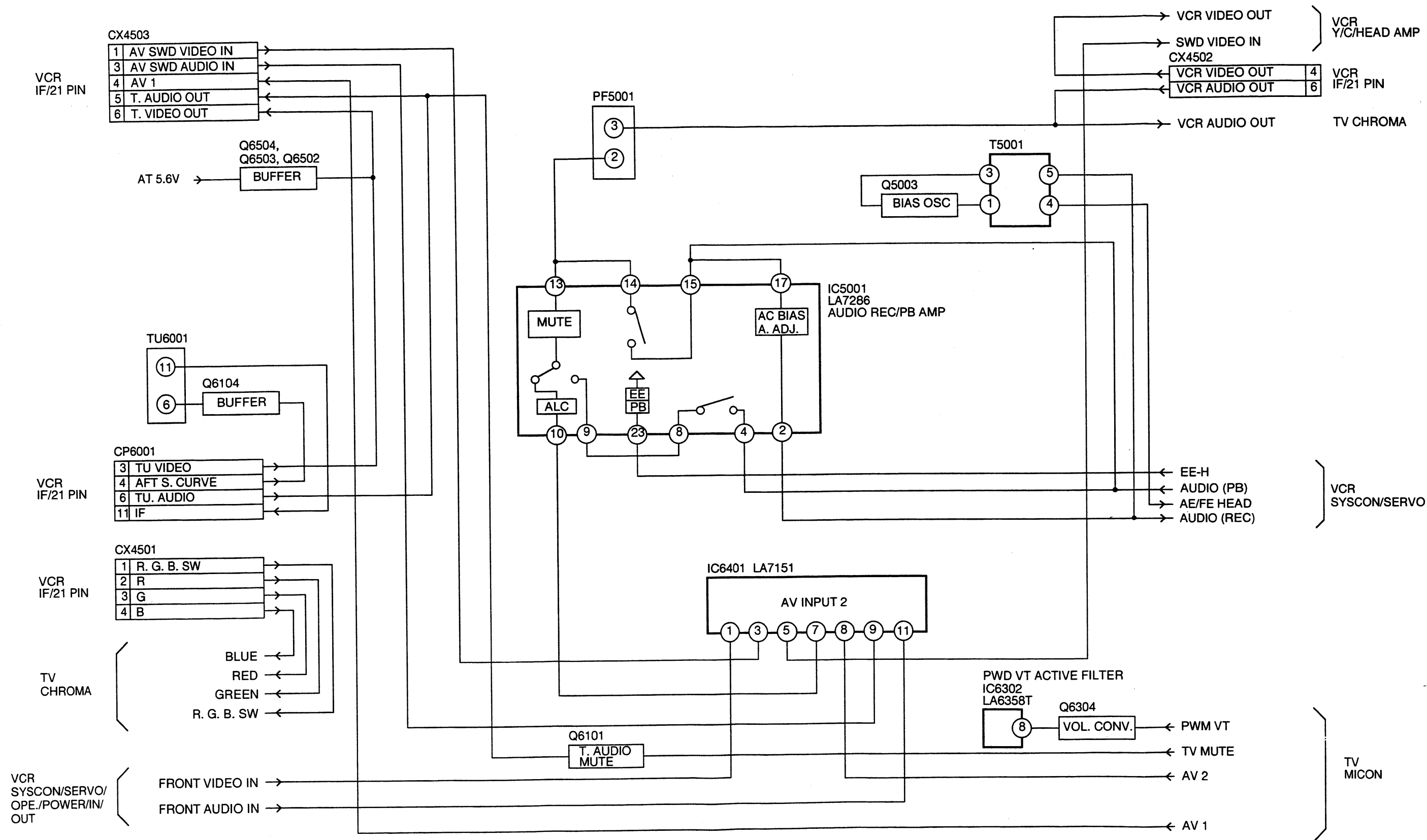
Y/C/HEAD AMP BLOCK DIAGRAM



VCR IF/21 PIN BLOCK DIAGRAM



VCR TUNER/AUDIO BLOCK DIAGRAM

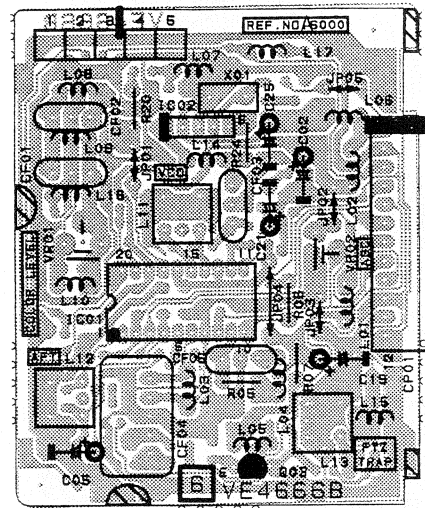


MAIN

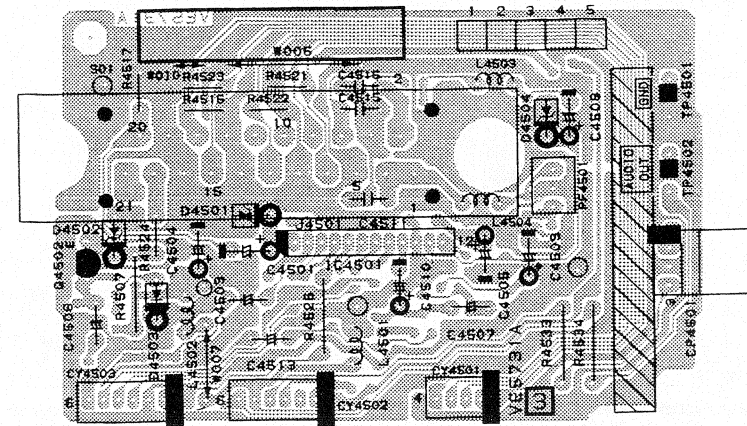


VCR PRINTED CIRCUIT BOARDS

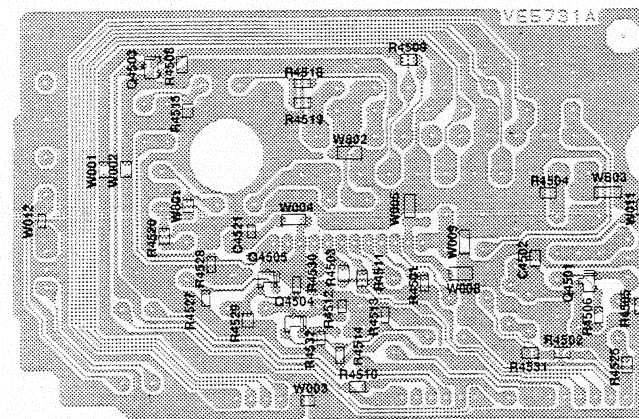
IF
COMPONENT SIDE



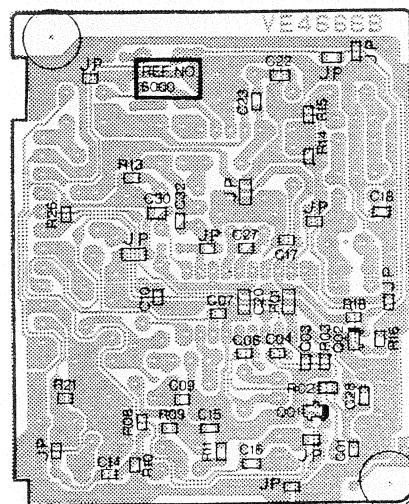
21PIN
COMPONENT SIDE



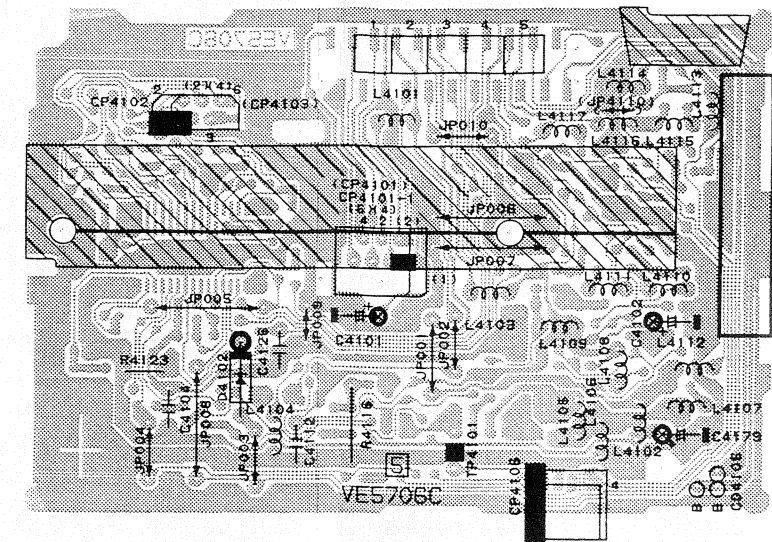
SOLDER SIDE



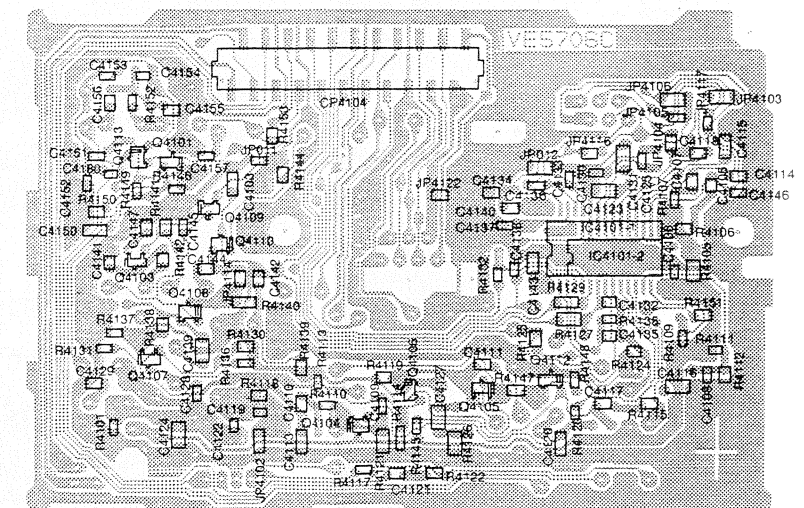
SOLDER SIDE



HEAD AMP
COMPONENT SIDE

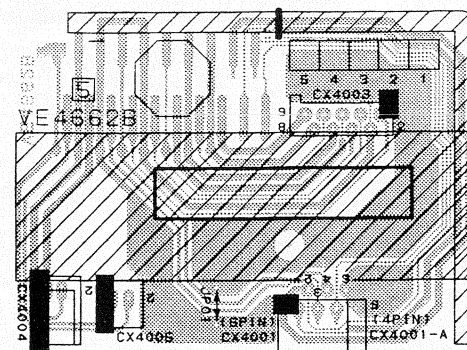


SOLDER SIDE

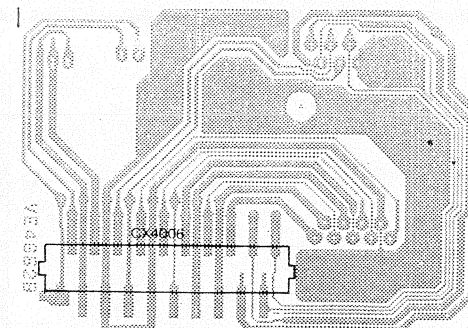


DECK RELAY

COMPONENT SIDE



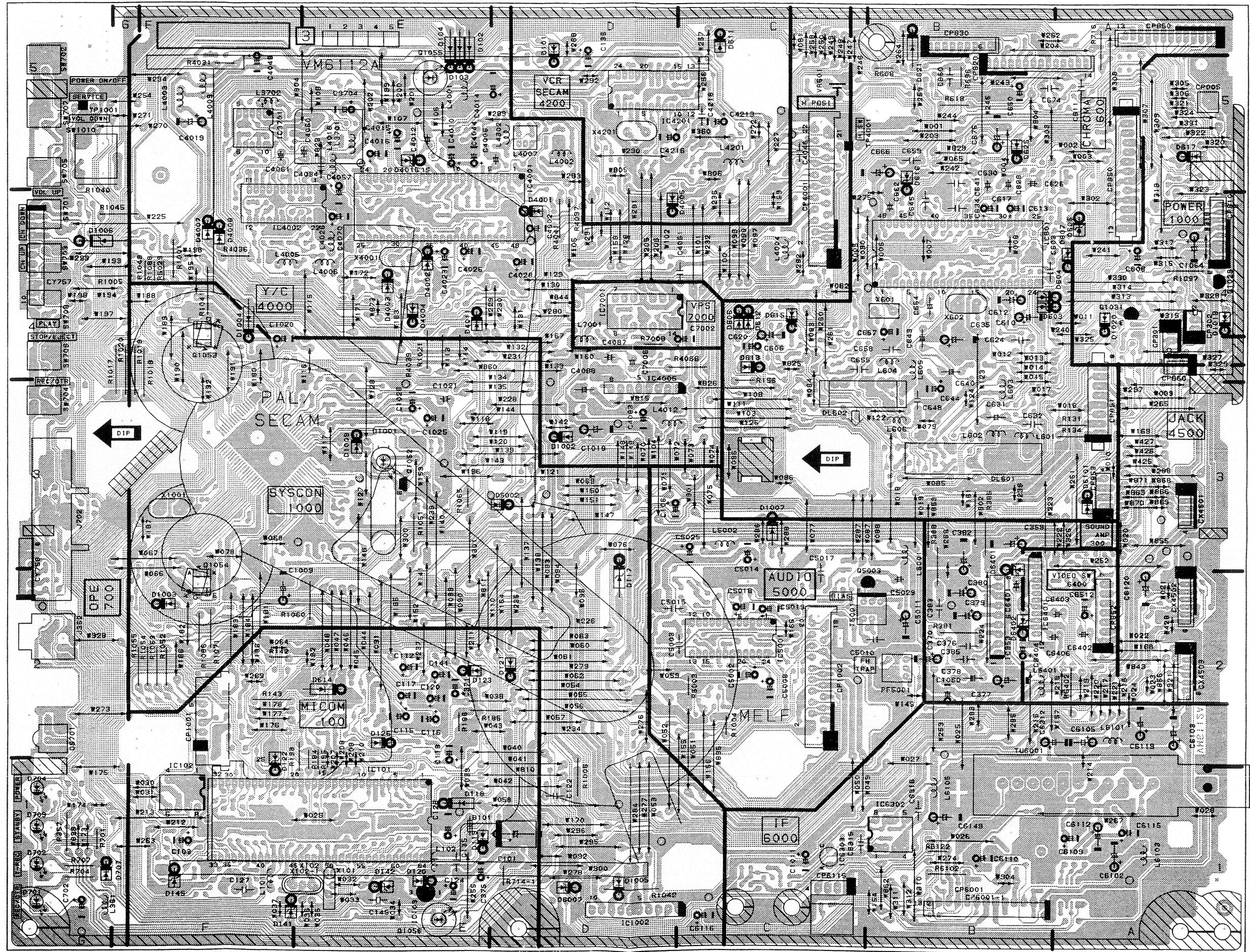
SOLDER SIDE



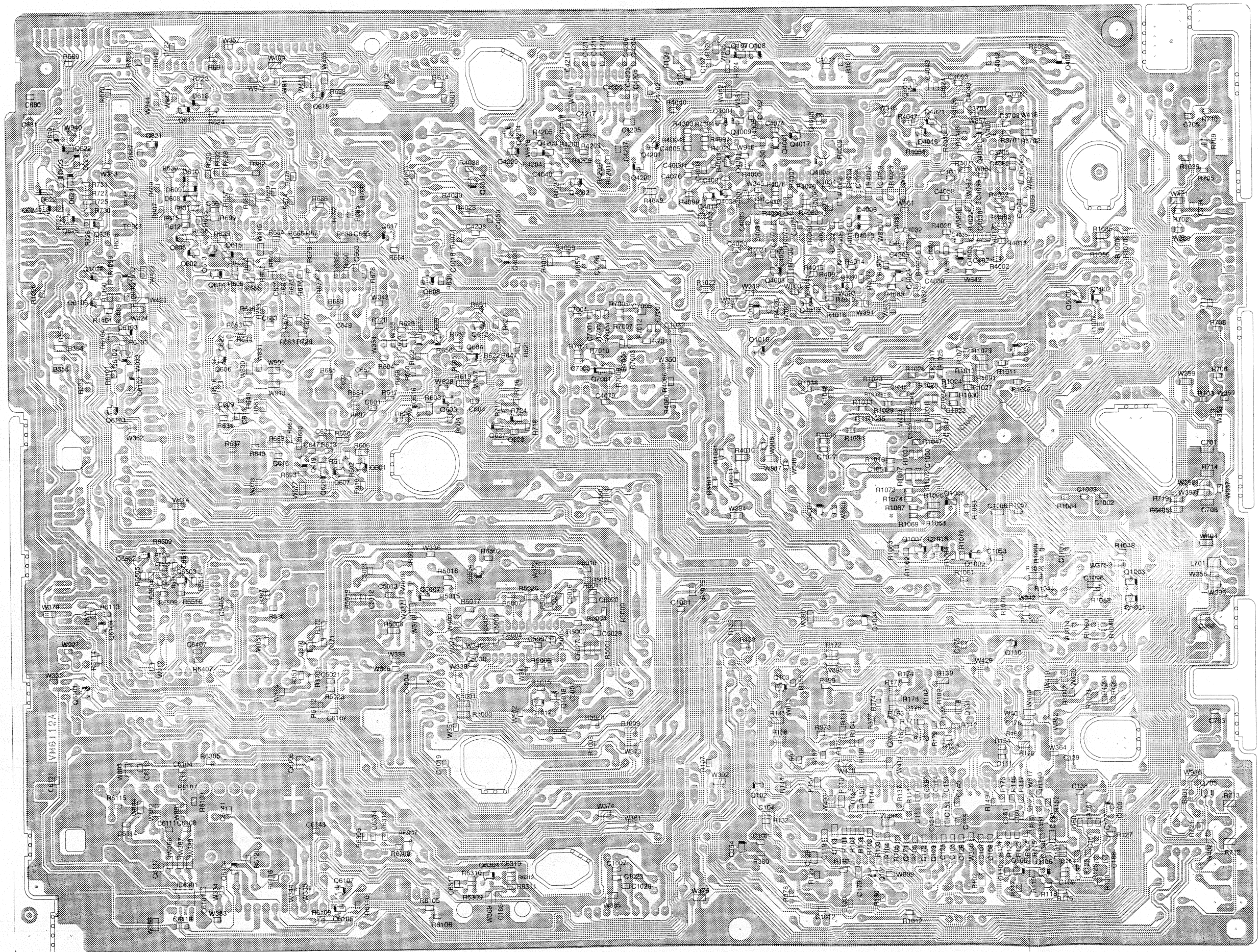
VCR PRINTED CIRCUIT BOARDS

MAIN

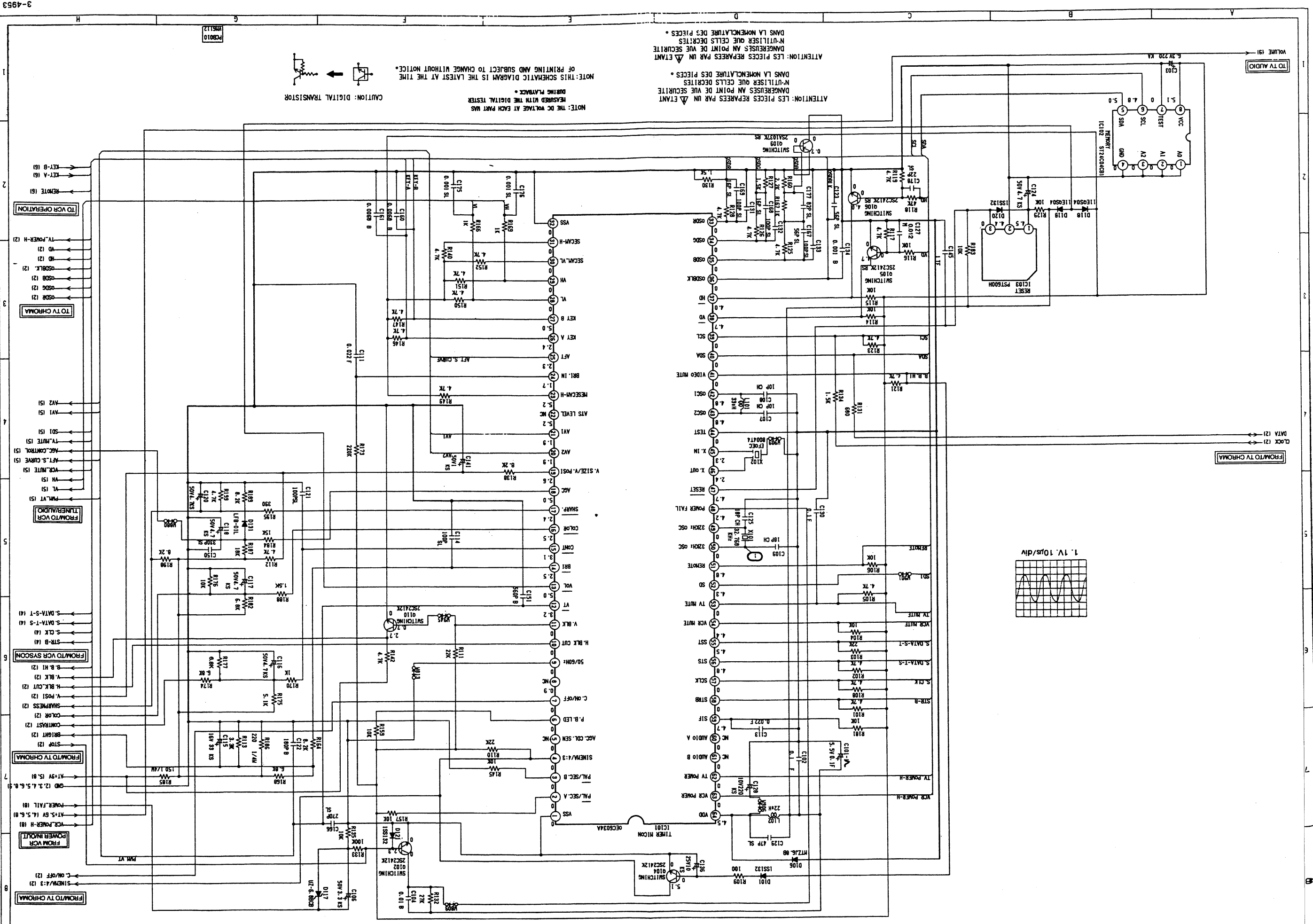
COMPONENT SIDE



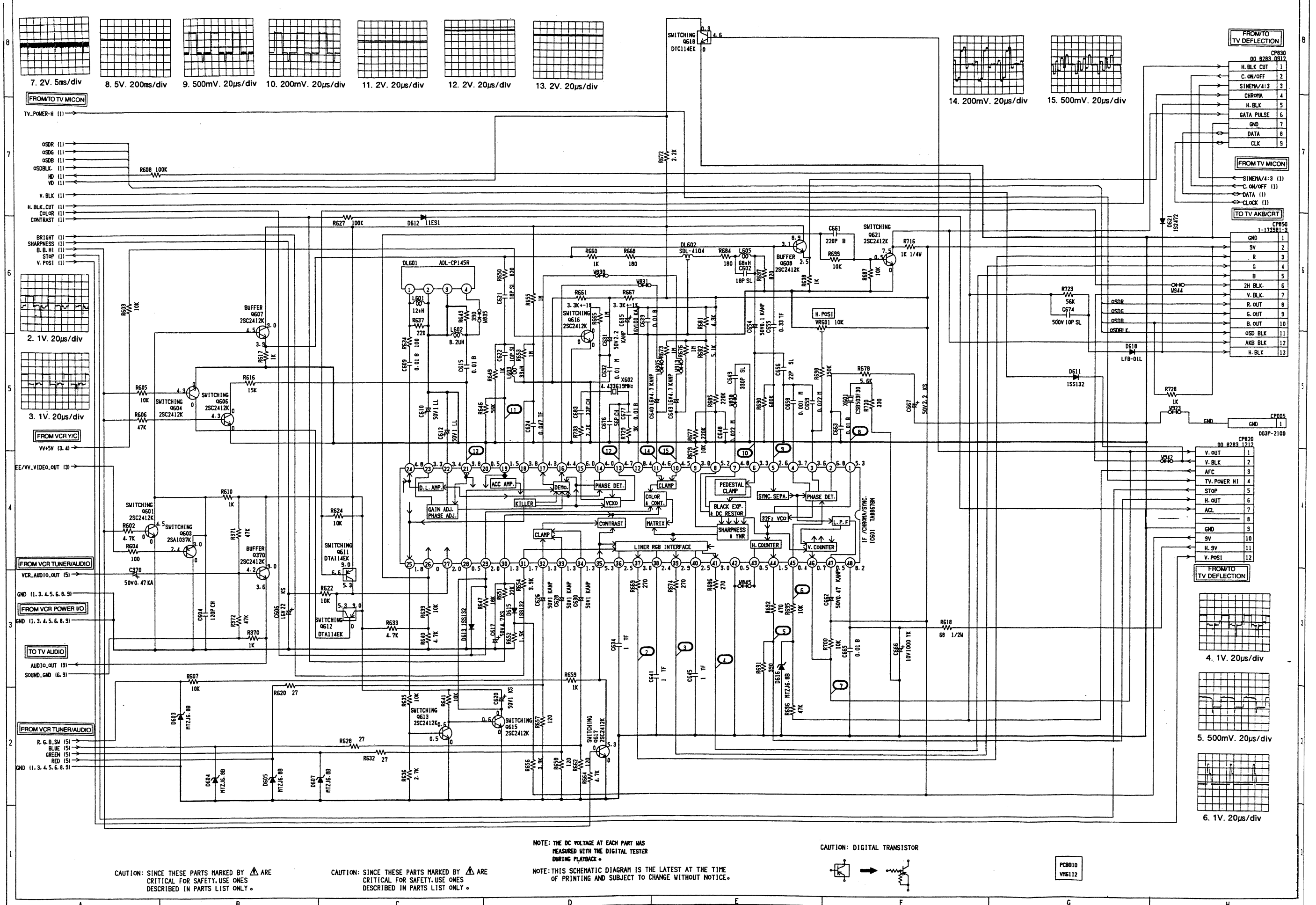
VCR PRINTED CIRCUIT BOARDS
MAIN
SOLDER SIDE



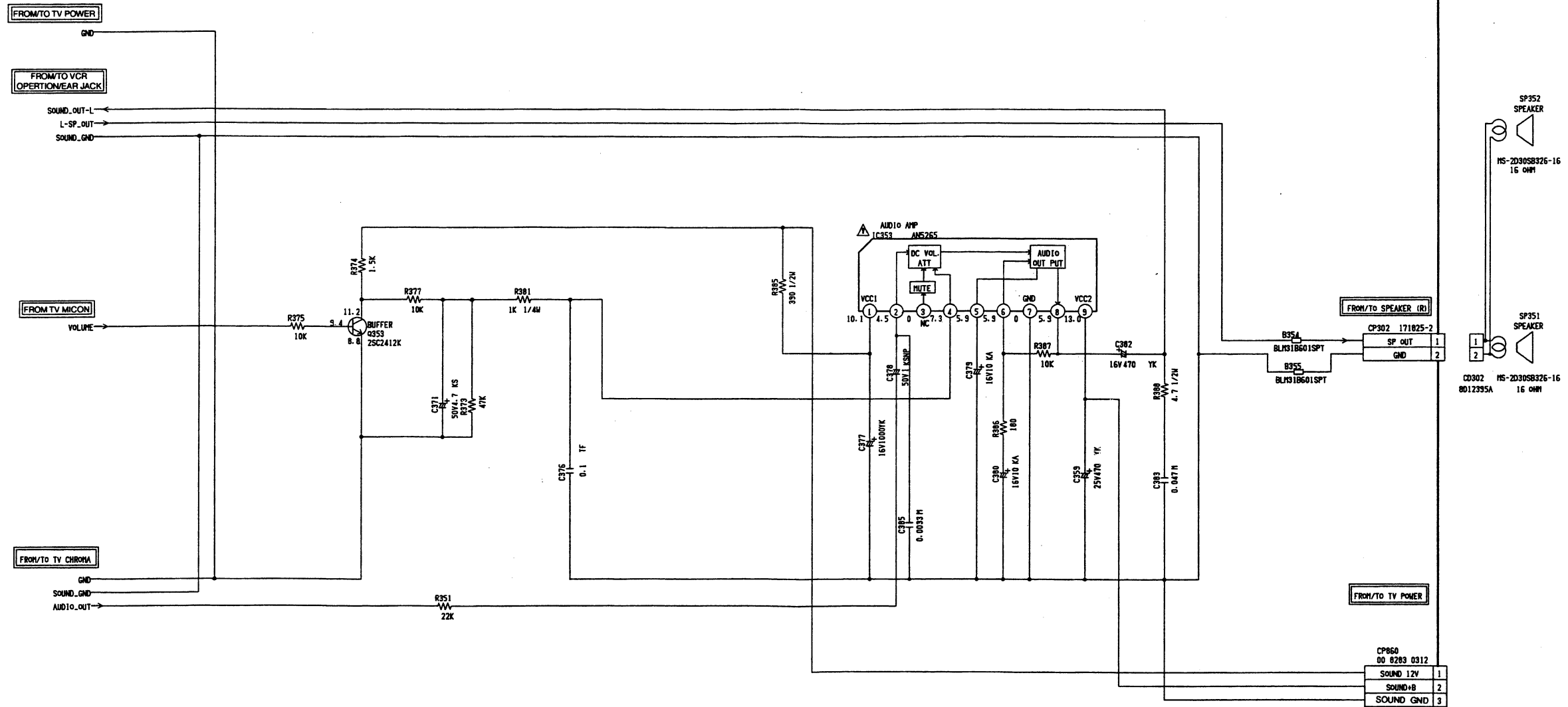
TV MICON SCHEMATIC DIAGRAM



TV CHROMA SCHEMATIC DIAGRAM



TV AUDIO SCHEMATIC DIAGRAM



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

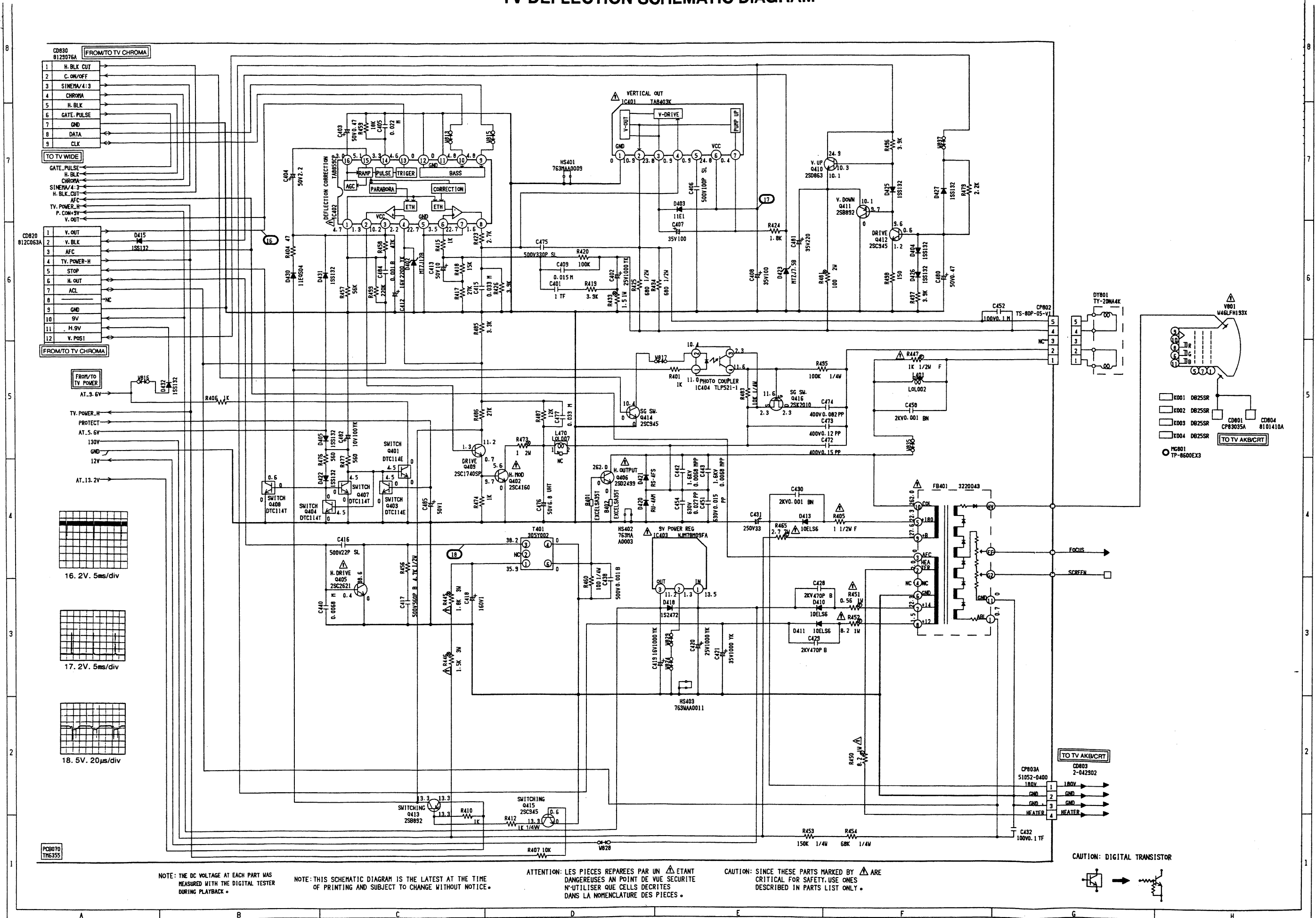
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMENCLATURE DES PIÈCES.

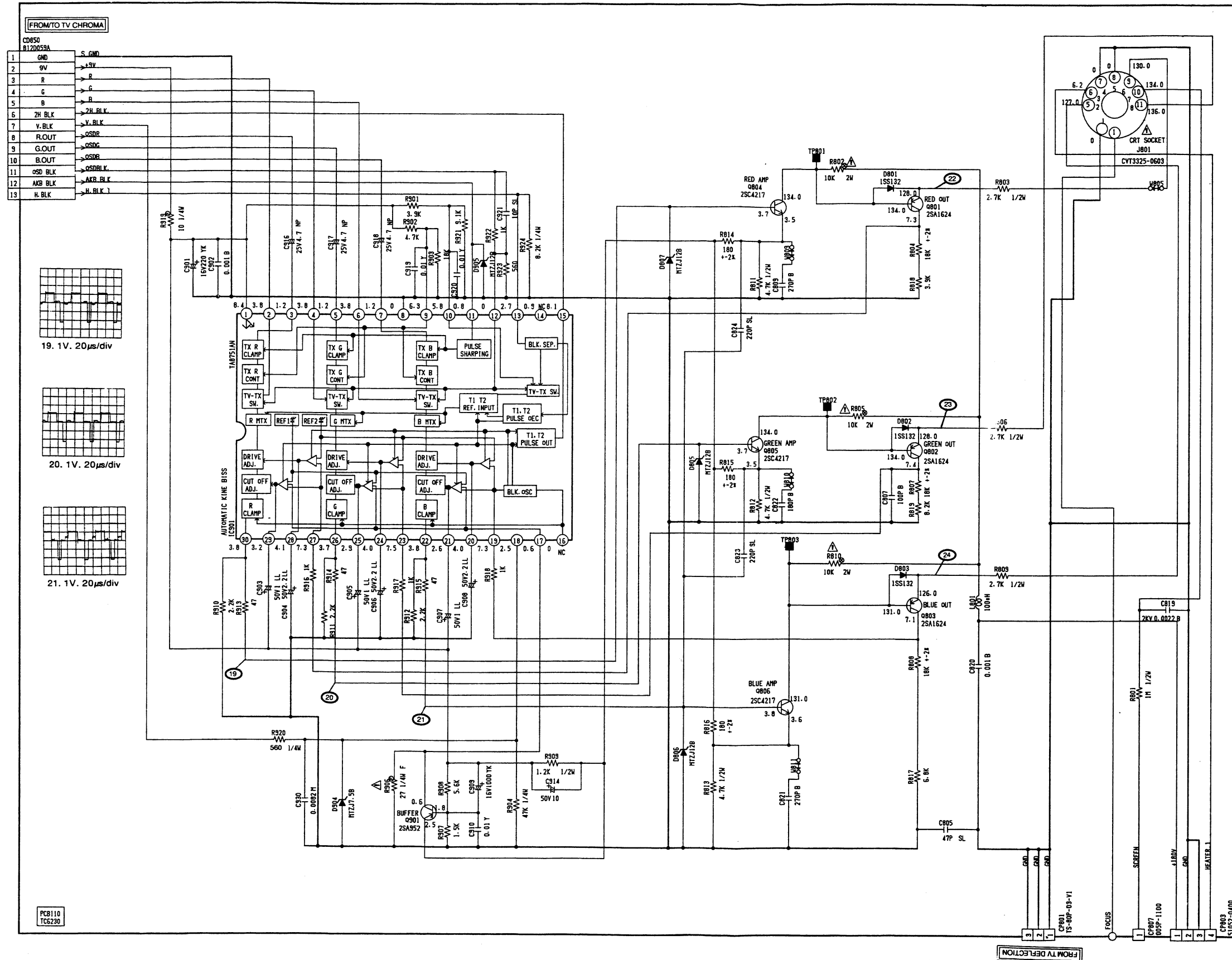
CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

PC8010
VMS112

TV DEFLECTION SCHEMATIC DIAGRAM



TV AKB/CRT SCHEMATIC DIAGRAM



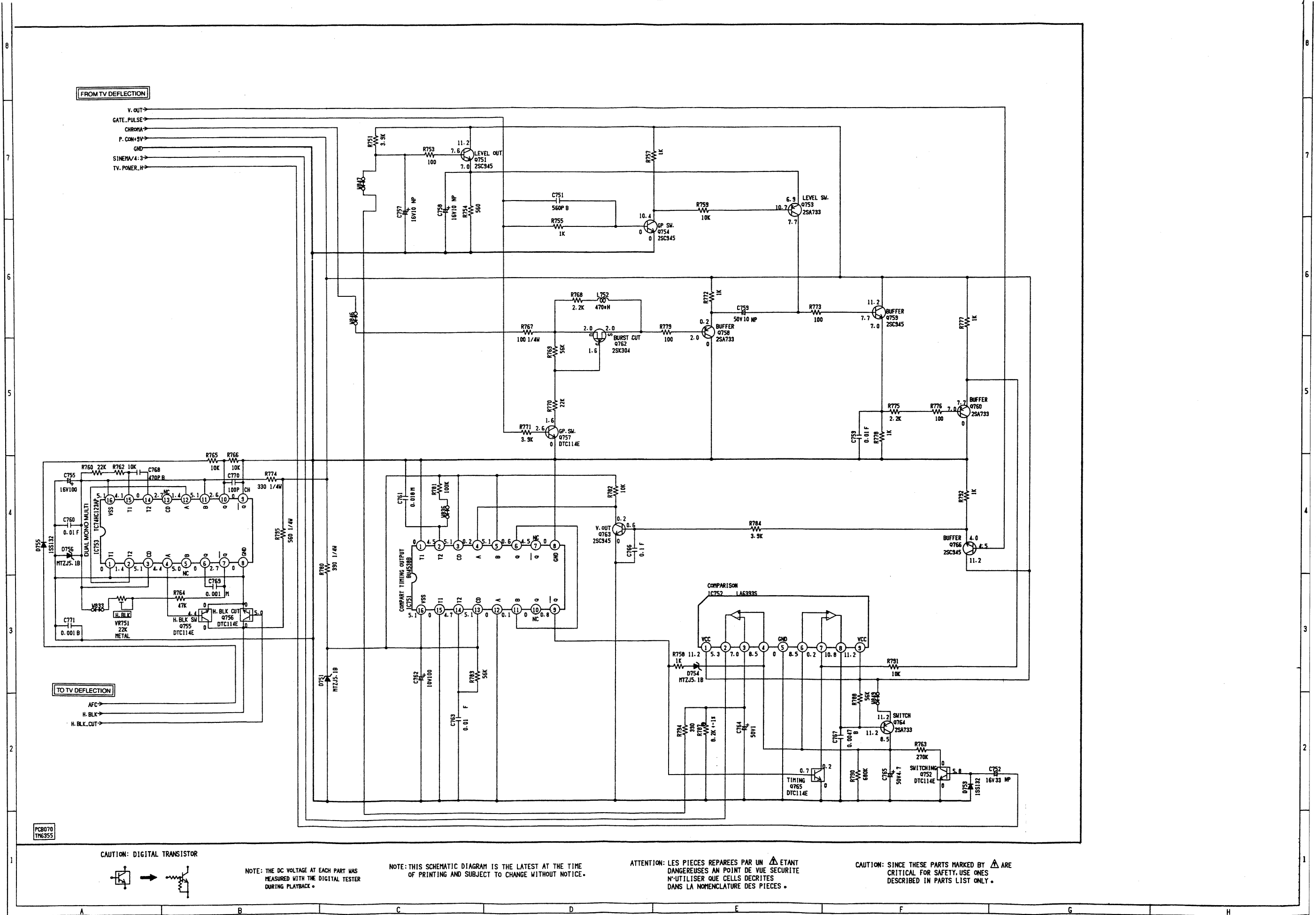
NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

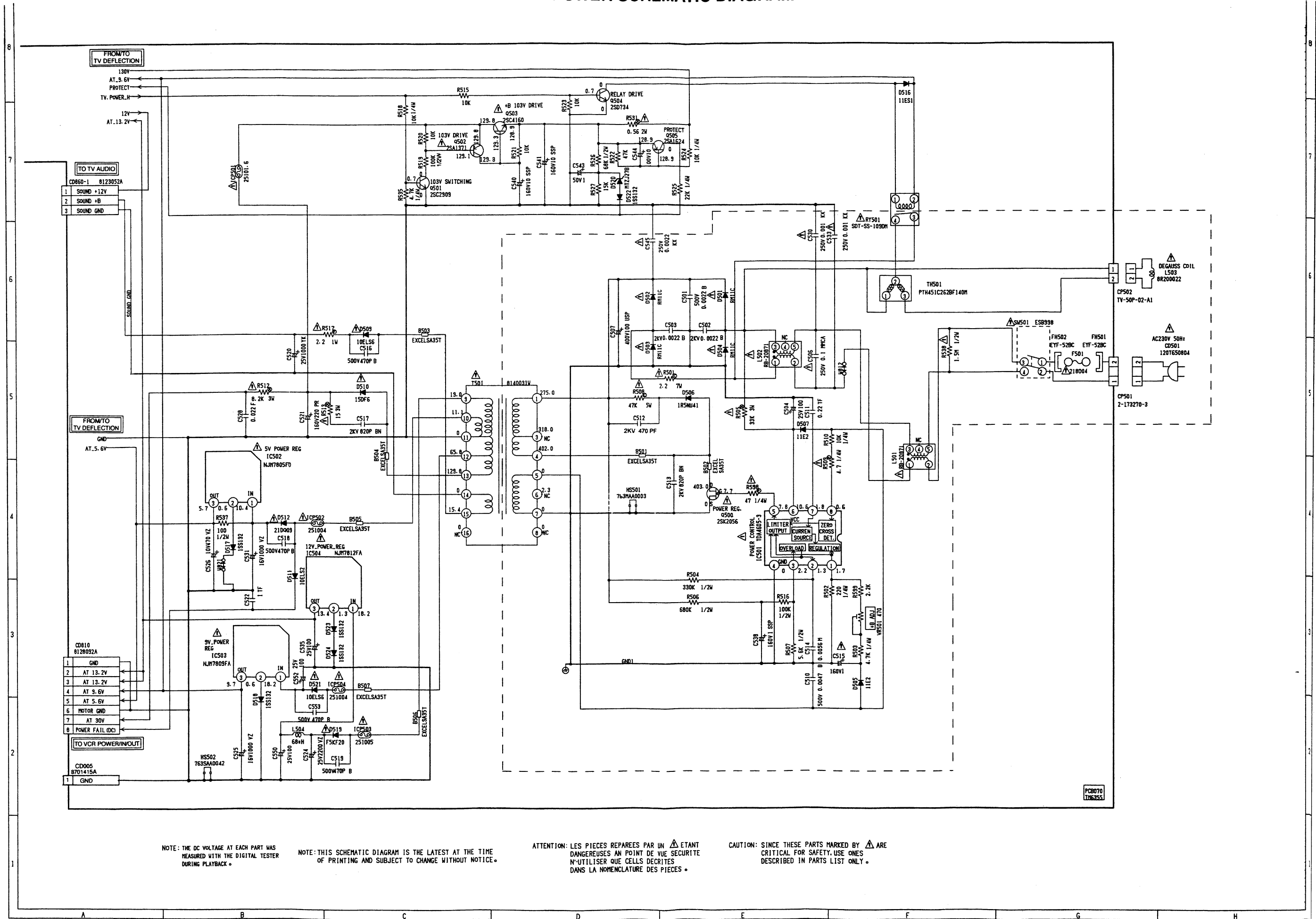
CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN Δ ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ N'UTILISER QUE CELLES DÉCRITES DANS LA NOMÉCLATURE DES PIÈCES.

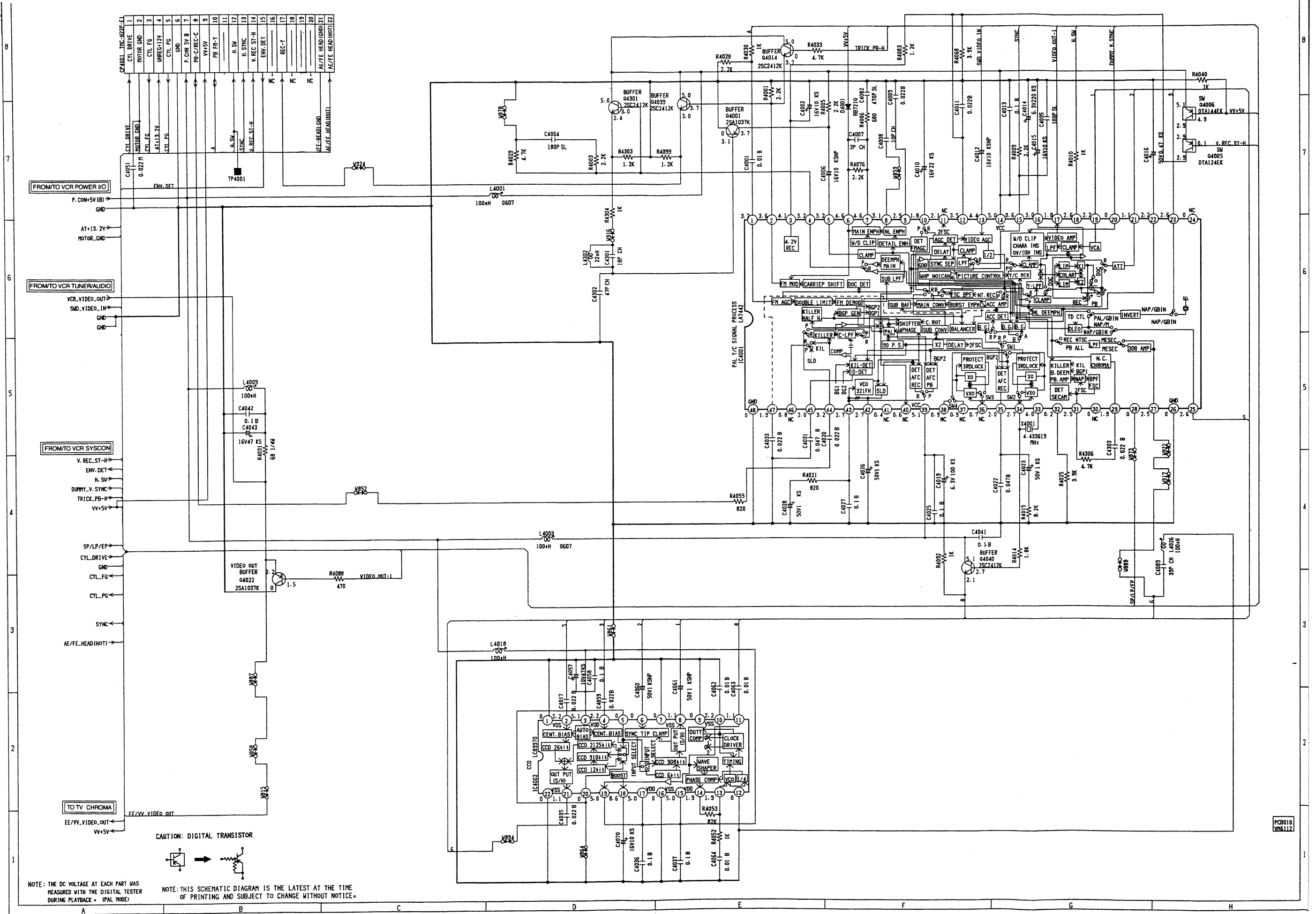
TV WIDE SCHEMATIC DIAGRAM



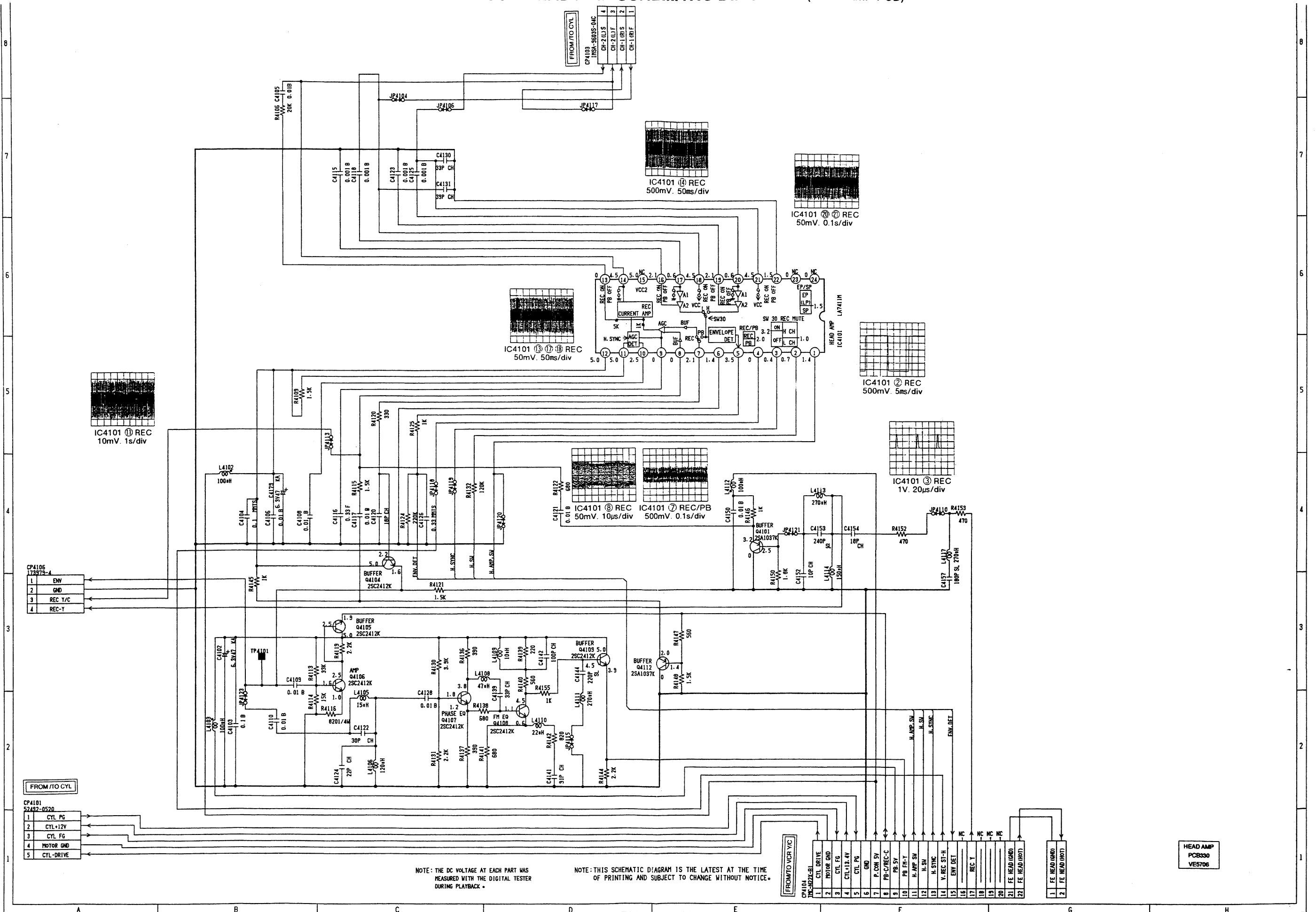
TV POWER SCHEMATIC DIAGRAM



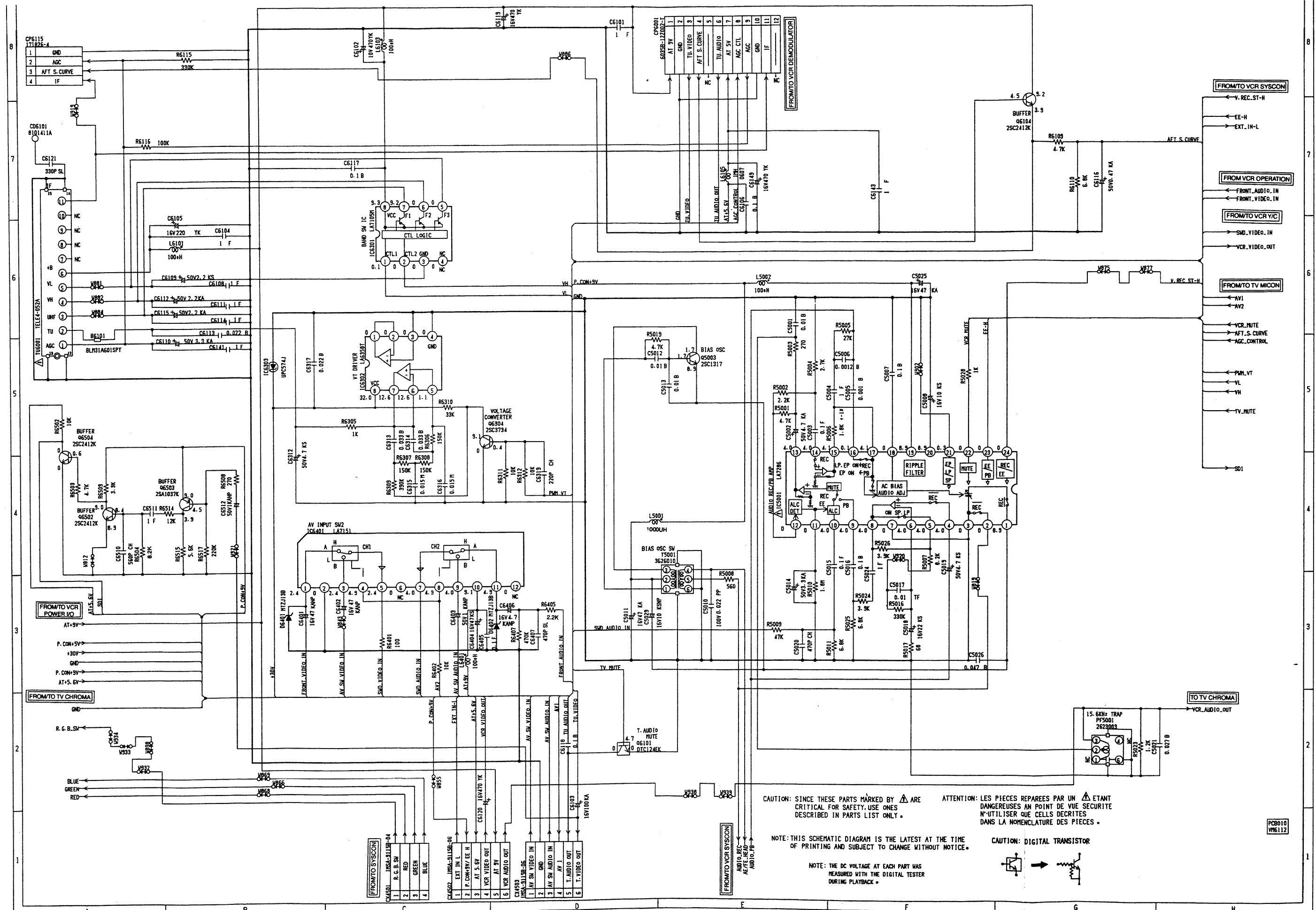
VCR Y/C SCHEMATIC DIAGRAM



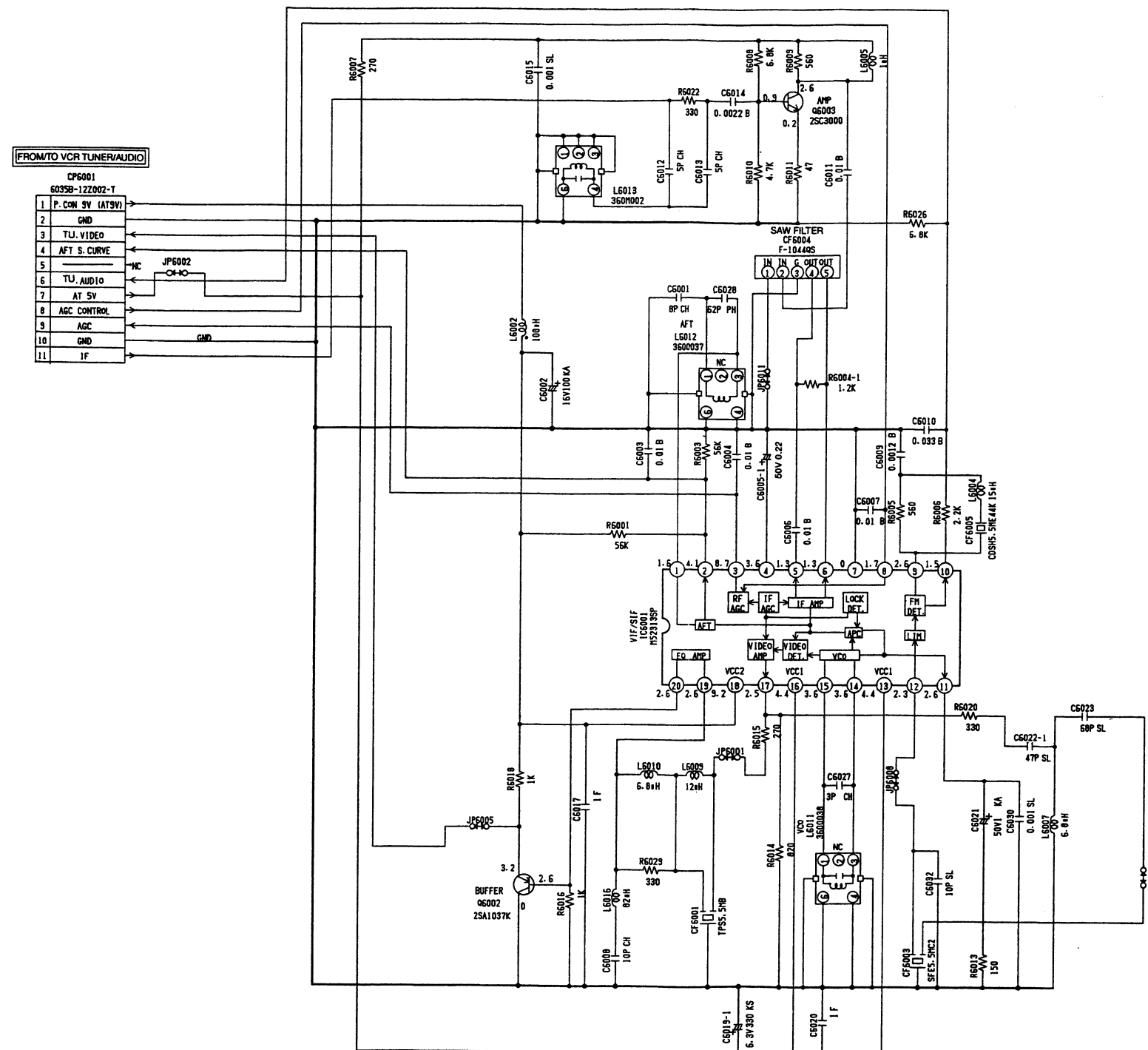
VCR HEAD AMP SCHEMATIC DIAGRAM (HEAD AMP PCB)



VCR TUNER/AUDIO SCHEMATIC DIAGRAM



VCR IF SCHEMATIC DIAGRAM



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

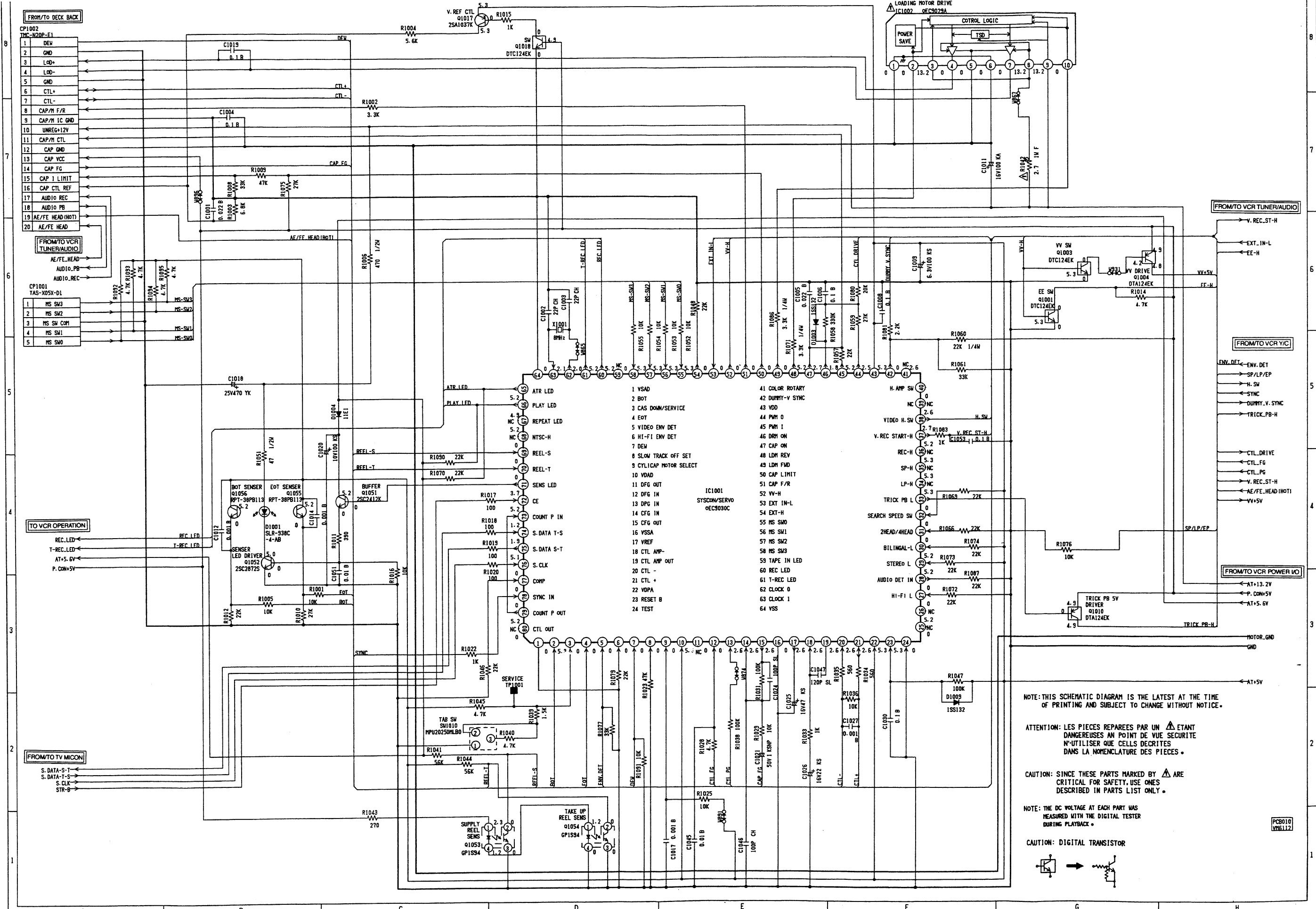
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

CAUTION: SINCE THESE PARTS MARKED BY Δ ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

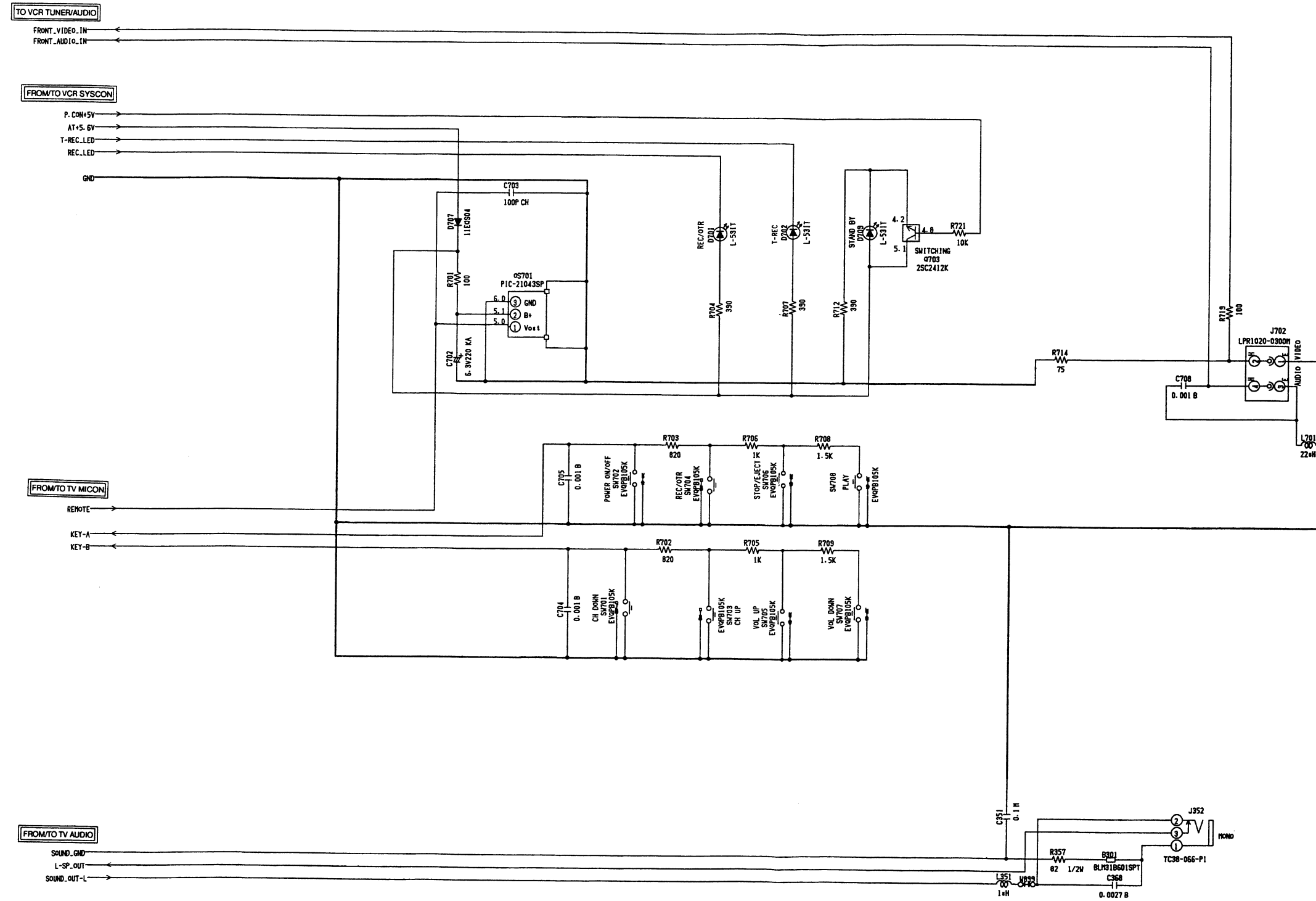
ATTENTION: LES PIECES REPAREES PAR UN Δ ETANT DANGEREUSES AU POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIECES.

PCB350
VE4666

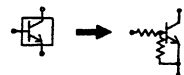
VCR SYSTEM CONTORL SCHEMATIC DIAGRAM



VCR OPERATION SCHEMATIC DIAGRAM



CAUTION: DIGITAL TRANSISTOR



NOTE: THE DC VOLTAGE AT EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

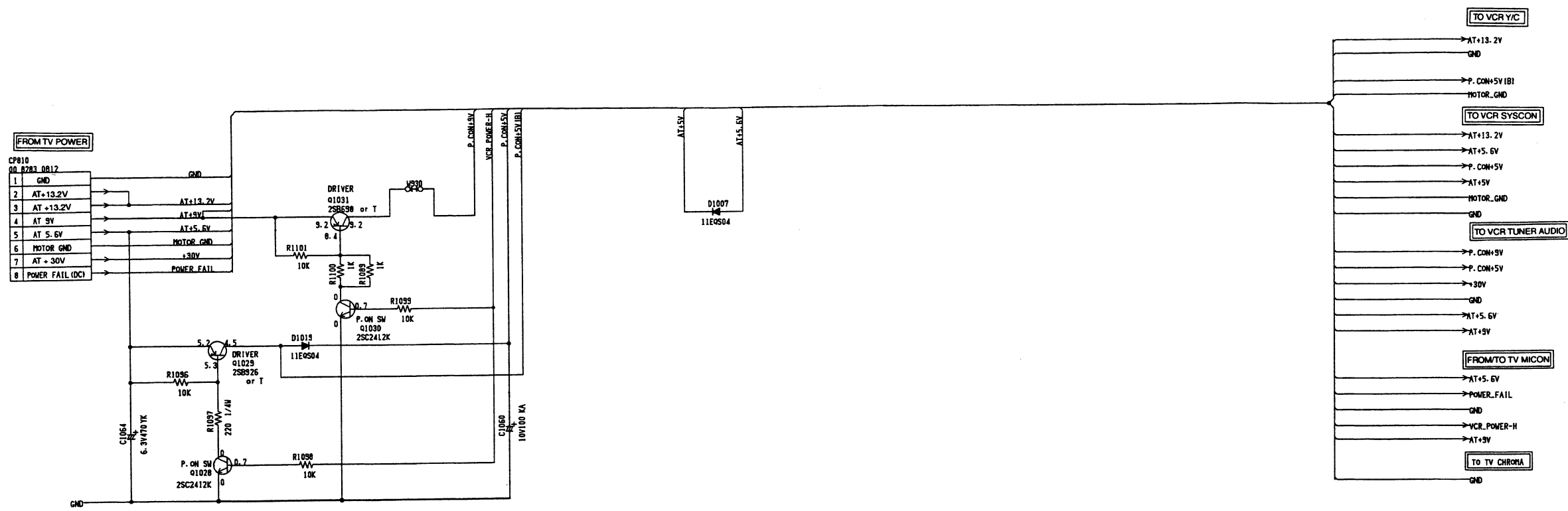
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

ATTENTION: LES PIÈCES RÉPARÉES PAR UN ÉTANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLES DECRITES DANS LA NOMENCLATURE DES PIÈCES.

CAUTION: SINCE THESE PARTS MARKED BY ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

PCB010 VME112

VCR POWER/IN/OUT SCHEMATIC DIAGRAM



PCB010
VNS112


VCR 21PIN SCHEMATIC DIAGRAM


21PIN
PCB260
VES731

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.

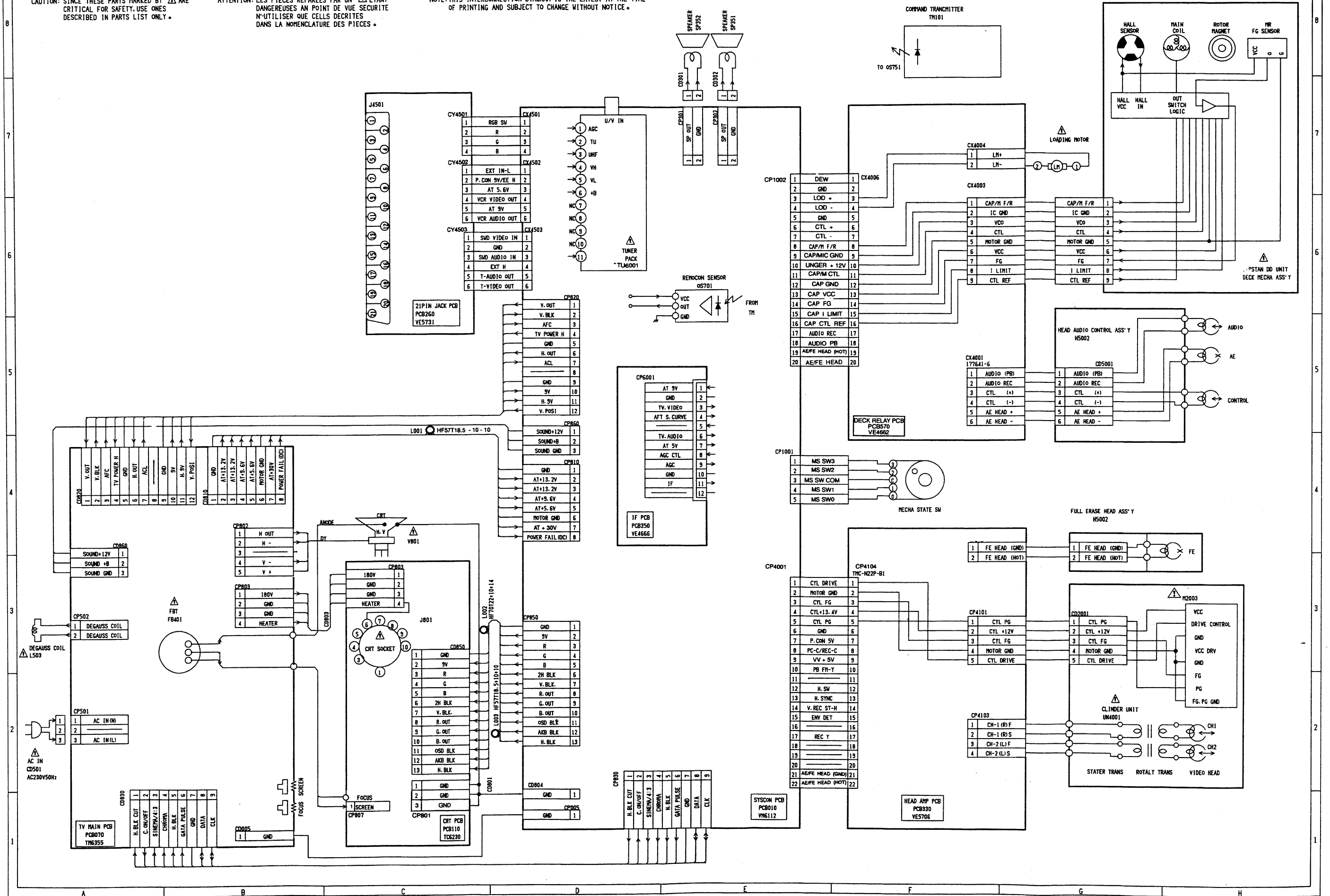
21PIN
PCB260
VE5731

INTERCONNECTION DIAGRAM

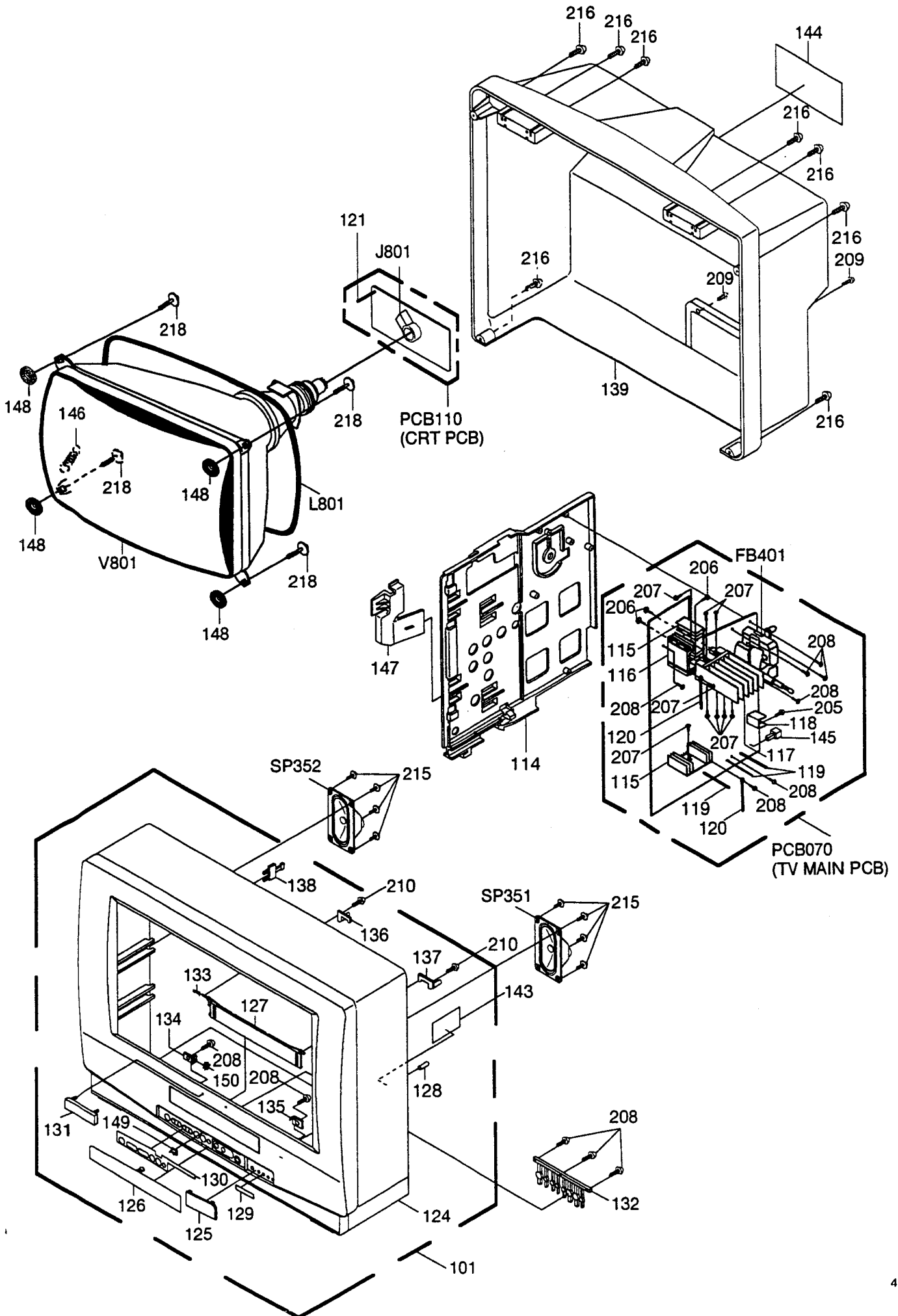
CAUTION: SINCE THESE PARTS MARKED BY  ARE CRITICAL FOR SAFETY, USE ONES DESCRIBED IN PARTS LIST ONLY.

ATTENTION: LES PIÉCES REPARÉES PAR UN  ÉTANT DANGEREUSES AU POINT DE VUE SÉCURITÉ, N'UTILISER QUE CELLES DÉCRITES DANS LA NOMÉNCLEATURE DES PIÉCES.

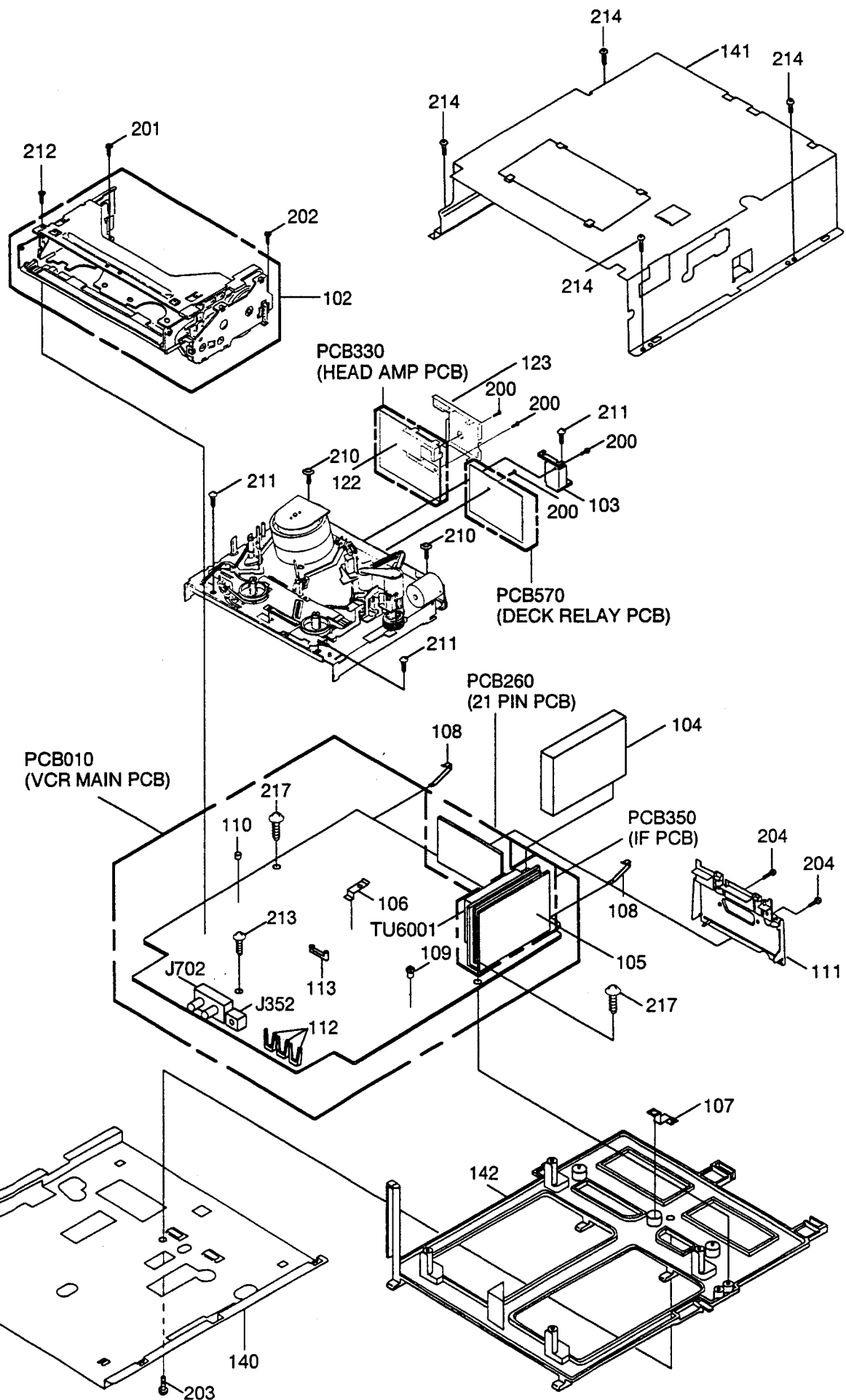
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE.



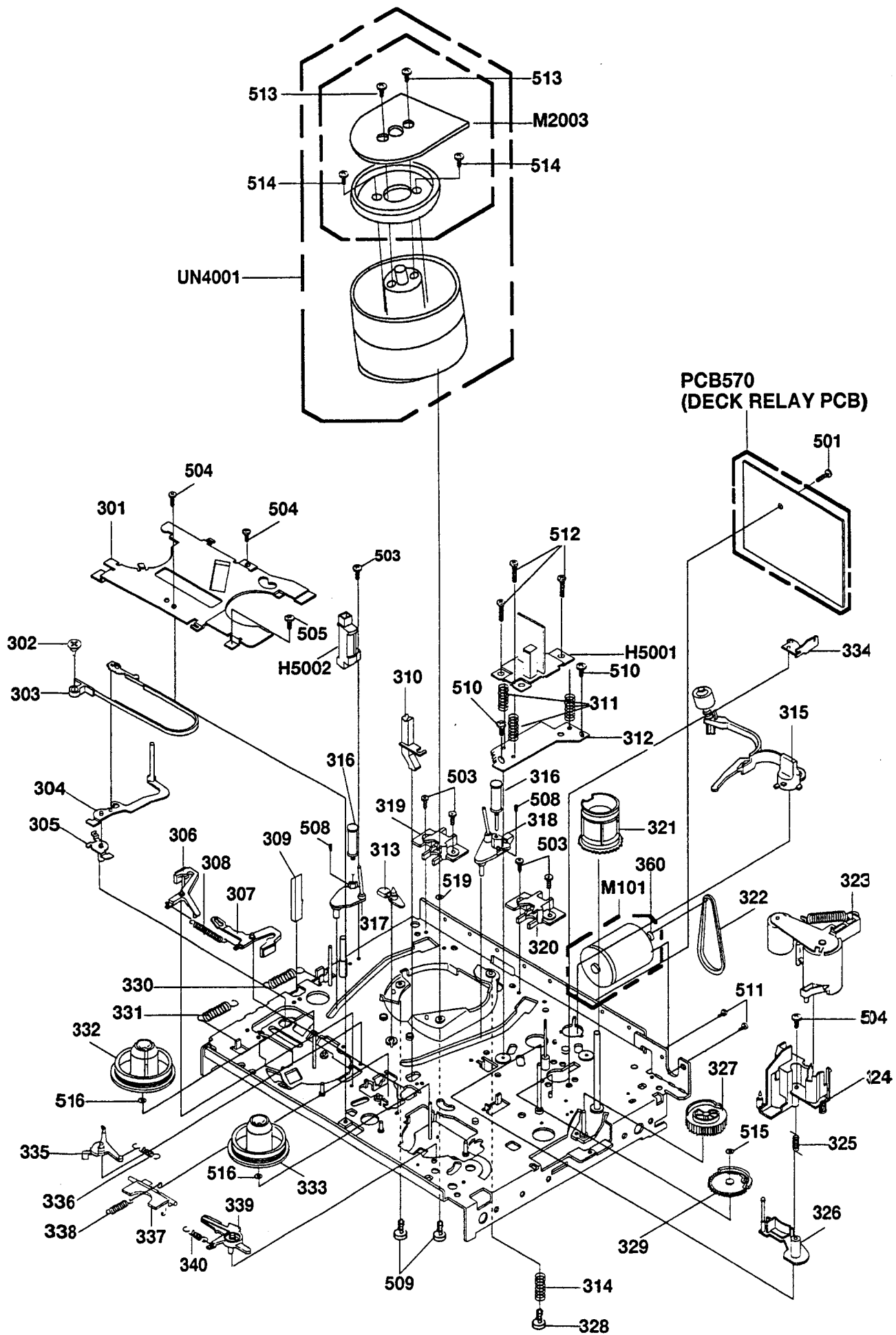
MECHANICAL EXPLODED VIEW



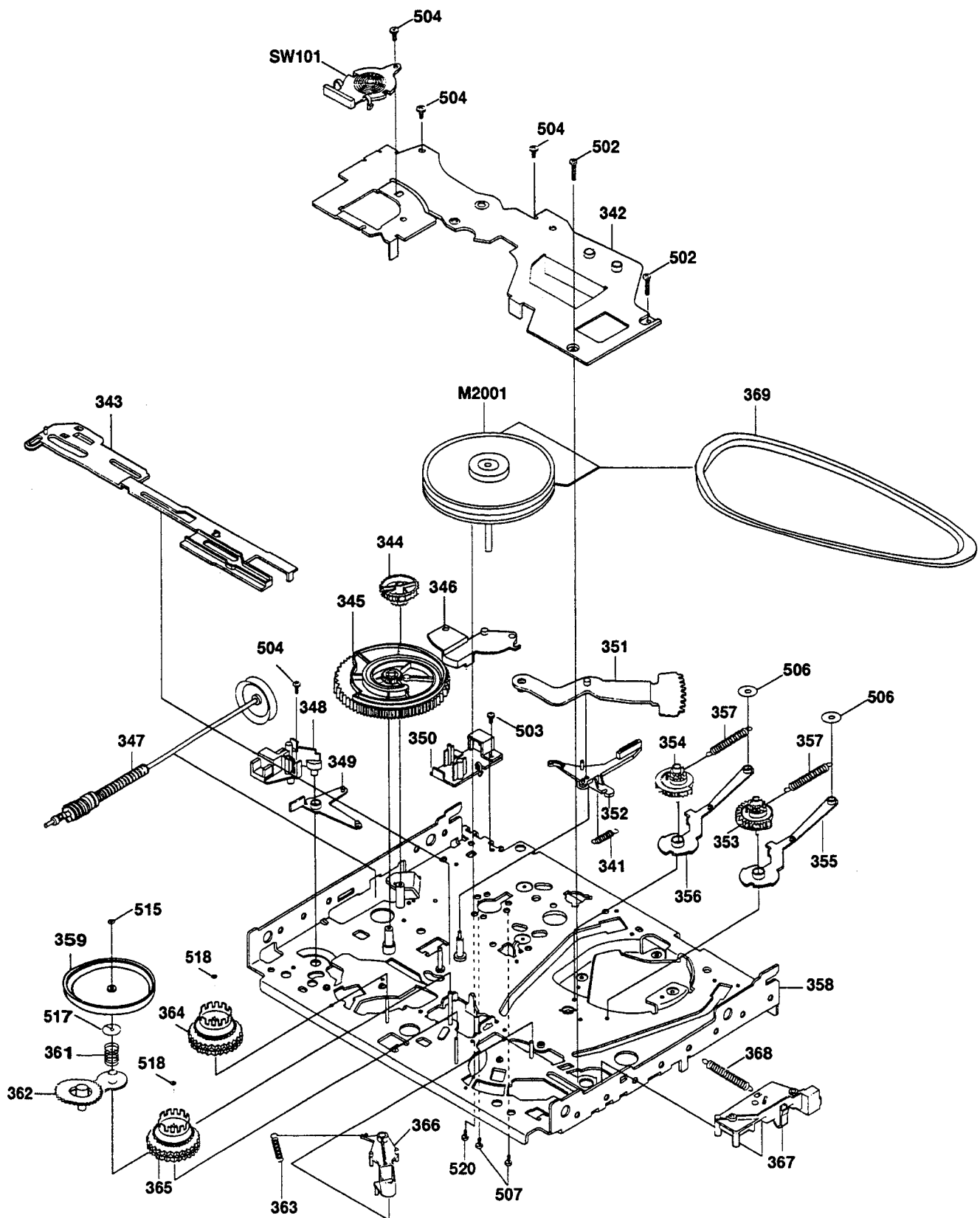
MECHANICAL EXPLODED VIEW



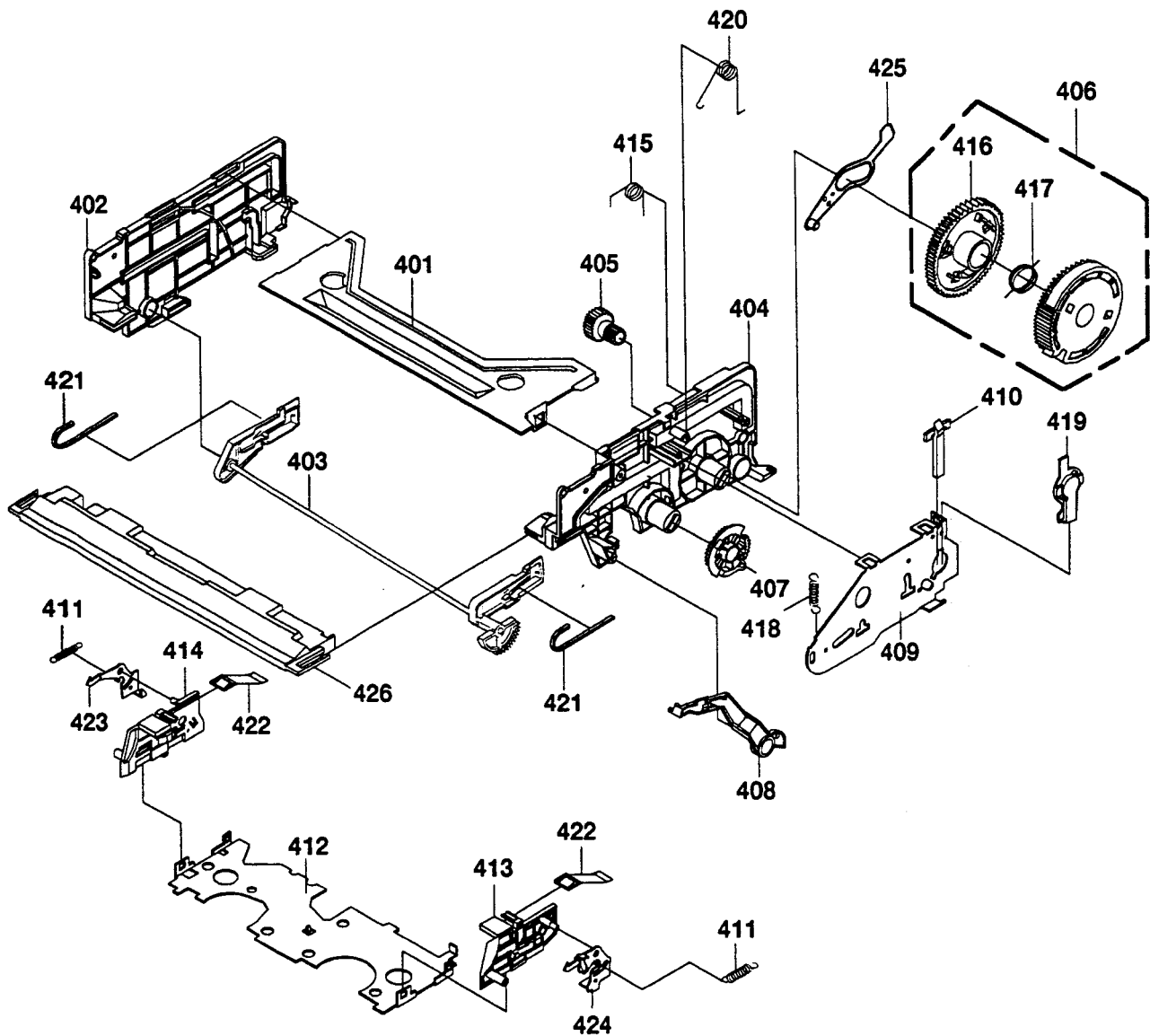
CHASSIS EXPLODED VIEW (TOP VIEW)



CHASSIS EXPLODED VIEW (BOTTOM VIEW)



UNIT ASS'Y 2 EXPLODED VIEW



MECHANICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION
101	A52202A720	CABINET, FRONT ASS'Y
102	850A900170	UNIT ASS'Y 2
103	762WSA0024	ANGLE, DECK BACK
104	752WSA0032	IF SHIELD CASE
105	752WSA0033	IF SHIELD BOTTOM
106	753WSA0058	PLATE, EARTH SYSCON
107	753WSA0086	PLATE, BOTTOM-EARTH
108	753WUA0025	SPRING, EARTH M-PCB
109	754WPA0010	COVER, LED (R)
110	754WPA0011	COVER, LED (L)
111	771WPA0201	PLATE, JACK
112	779WPA0001	HOLDER, LED
113	850PT00031	HOLDER, LED
114	761WPA0034	HOLDER, TV PCB
115	----	HEAT SINK
116	----	HEAT SINK
117	----	HEAT SINK
118	----	HEAT SINK
119	----	COATING CLIP
120	8995034000	CORD CLIP UL CO.
121	----	STYLE PIN
122	753WSA0068	SHIELD, CASE HEAD AMP
123	753WSA0069	SHIELD, COVER HEAD AMP
124	701WPJ0708	CABINET, FRONT
125	711WPD0408	PLATE, FRONT
126	712WPJ0481	DOOR
127	712WPJ0482	FLAP
128	713MPA0005	GUIDE, REMOCON
129	7230006204	SHEET, LED
130	7230006314	SHEET, OPERATION
131	7232020559	BADGE, BRAND
132	735WPA0258	BUTTON, FRAME
133	743WKA0022	SPRING, FLAP
134	756WPA0023	HOLDER, DOOR(L)
135	756WPA0024	HOLDER, DOOR(R)
136	756WPA0029	HOLDER, FLAP(L)
137	756WPA0031	HOLDER, FLAP(R)
138	761WPA0030	HOLDER, PCB(2)
139	702WPA0401	CABINET, BACK
140	752WSA0080	PLATE, SHIELD BOTTOM
141	752WSA0082	PLATE, SHIELD TOP
142	761WPA0082	HOLDER, DECK
143	7220001066	SHEET, PTB
144	722022303	SHEET, RATING
145	735WPA0272	BUTTON, POWER
146	741WUA0005	SPRING, EARTH
147	761WPA0031	HOLDER, PCB(3)
148	800WR00022	SHEET, CRT SUPPORT(A)
149	890LA10000	NC LATCH
150	898NRTNC11	DR DUMPER
200	8107230604	SCREW, TAP TITE(S) BIND 3*6
201	8107226604	SCREW, TAP TITE(S) BIND 2.6*6
202	8107226804	SCREW, TAP TITE(S) BIND 2.6*8
203	8110230604	SCREW, TAP TITE(P) BIND 3*6
204	8117430A62	SCREW, TAPPING(B0) OVAL 3*16
205	810A130804	SCREW/WASHER(A) M3*8
206	810C630804	SCREW, WASHER(C) 3*8
207	8109630804	SCREW, TAP TITE(B) BRAZIER 3*8
208	8110630804	SCREW, TAP TITE(P) BRAZIER 3*8
209	8110630A24	SCREW, TAP TITE(P) BRAZIER 3*12
210	8117D30A04	SCREW, TAPPING(B0) WH8 BRAZIER 3*10
211	8117140A24	SCREW, TAPPING(B0) PAN 4*12
212	8117330A04	SCREW, TAPPING(B0) FLAT 3*10
213	8117340A24	SCREW, TAPPING(B0) FLAT 4*12
214	8900001DTP	SCREW, LAMI TITE(A) PAN 3*6
215	8117D30804	SCREW, TAPPING(B0) WH8 3*8
216	8117540A64	SCREW, TAPPING(B0) TRUSS 4*16
217	8117540B04	SCREW, TAPPING(B0) TRUSS 4*20
218	8141J50D04	SCREW, TAP TITE(P) GW22 5*40
---	JB5K0500	POLYBAG
---	J4B10720	DEW CAUTION SHEET
---	J5220201	INSTRUCTION BOOK
---	J5220202	GUARANTEE CARD
---	J5220207	QUICK SET UP SHEET
---	J5220228	WARNING SHEET
---	791WHA0025	LAMIFILM BAG
---	792WHA0161	PACKAGE, TOP
---	792WHA0162	PACKAGE, BOTTOM
---	793WCD0996	GIFT BOX

CHASSIS/UNIT ASS'Y 2 REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
301	850P600471	BRACKET, BRAKE	401	850P900617	BRACKET, TOP
302	850P400358	ADJUST. TENSION	402	850P900607	BRACKET, SIDE L
303	850A400122	TENSION BAND ASS'Y	403	850A900171	LINK ASSY 2
304	850A400124	TENSION ARM ASS'Y	404	850P900615	BRACKET, SIDE R
305	850A400123	TENSION LEVER 2 ASS'Y	405	850P900601	GEAR, JOINT
306	850A600155	MAIN BRAKE S ASS'Y	406	850P900602	GEAR, CAM
307	850A600156	MAIN BRAKE T ASS'Y	407	850P900609	GEAR, LINK R
308	850P800252	SPRING, MAIN BRAKE	408	850P900618	LEVER, FLAP 2
309	850P900564	REFLECTOR, EOT	409	850P900616	BRACKET, SIDE R2
310	850P400411	REFLECTOR, LED 2	410	850P900621	REFLECTOR, BOT
311	850P800269	SPRING, AC HEAD	411	850P800296	SPRING, LOCKER
312	850P500060	BASE, AC HEAD	412	850P900611	CASS HOLDER
313	850P000394	POST, CASS GUIDE L	413	850P900613	CASS, SIDE R
314	850P800245	SPRING, AZIMUTH 2	414	850P900612	CASS, SIDE L
315	850A500013	AHC ASS'Y	415	850P800298	SPRING, BRACKET R
316	850A400102	GUIDE ROLLER ASS'Y	416	850P900608	GEAR, CLUTCH
317	850A400126	BASE, S INCLINED ASS'Y	417	850P800297	SPRING, CLUTCH
318	850A400127	BASE, T INCLINED ASS'Y	418	850P800300	SPRING, FLAP LEVER
319	850P400400	CATCHER S	419	850P900620	COVER, SENSOR BOT
320	850P400401	CATCHER T	420	850P800290	SPRING, EARTH
321	850P400343	CAM, PINCH ROLLER	421	850P800294	SPRING, LINK
322	850P600487	BELT, LOADING	422	850P800299	SPRING, PACK
323	850A400117	PINCH ROLLER BLOCK	423	850P900605	LOCKER, L
324	850P900541	CASS OPENER	424	850P900606	LOCKER, R
325	850P800264	SPRING, P5	425	850P900610	LEVER, BOT
326	850A400120	P5 ARM ASS'Y	426	850P900619	TAPE GUIDE PIECE
327	850P400342	CAM, GEAR			
328	8146230A14	JOINT SCREW BIND	501	8107230604	SCREW, TAP TITE(S) BIND 3*6
329	850P400344	CAM, P5	502	8109226A64	SCREW, TAP TITE(B) BIND 2.6*16
		M3*11	503	8107226804	SCREW, TAP TITE(S) BIND 2.6*8
330	850P400356	SPRING, TENSION ARM 2	504	8107226604	SCREW, TAP TITE(S) BIND 2.6*6
331	850P400357	SPRING, TENSION ARM 1	505	8107123604	SCREW, TAP TITE(S) PAN 2.3*6
332	850P200216	REEL S	506	83CST40000	CS-RING 4.0
333	850P200217	REEL T	507	8110126604	SCREW, TAP TITE(P) PAN 2.6*6
334	850P400402	CATCHER, P5 2	508	815DJ20302	SET SCREW 6 CUP POINT M2*3
335	850P600465	SUB BRAKE S	509	810A130604	SCREW/WASHER(A) M3*6
336	850P800253	SPRING, S-S BRAKE			
337	850P200214	ARM, JOINT	510	810B126604	SCREW/WASHER(B) M2.6*6.0
338	850P800262	SPRING, JOINT ARM	511	8102130304	SCREW, PAN M3.0*3.0
339	850A600157	SUB BRAKE T ASS'Y	512	8102126A04	SCREW, PAN M2.6*10
			513	810A123504	SEMS A M2.3*5.0
340	850P800254	SPRING, T-S BRAKE	514	850PAA0197	SCREW, MOTOR M3*5
341	850P800255	SPRING, CAP BRAKE	515	82P266005N	POLYSLIDER WASHER(CUT) 2.6*6.0*TO.5
342	850P600485	PLATE, BOTTOM	516	82Q264713N	POLYSLIDER WASHER 2.6*4.7*TO.5
343	850A600160	ROD, MAIN ASS'Y	517	82P26A005N	POLYSLIDER WASHER(CUT) 2.6*10*TO.5
344	850P400341	GEAR, MIDDLE	518	82P166005N	POLYSLIDER WASHER(CUT) 1.6*6.0*TO.5
345	850P600472	CAM, MAIN	519	82Q315404N	POLYSLIDER WASHER 3.1*5.4*TO.4
346	850P600468	LEVER, MAIN BRAKE			
347	850A600159	WORM ASS'Y	520	8109126806	SCREW, TAP TITE(B) PAN 2.6*8
348	850P600483	BRACKET, WORM F			
349	850P600474	LEVER, RATCHET	CD1001	068722058A	CORD, EIS CONNECTOR 8722058A
			CD2001	122W060803	CORD, JUMPER 2W060803
			CD5001	122B050901	CORD, JUMPER 2B050901
350	850P600484	BRACKET, WORM R			
351	850P300151	LEVER, LOADING	CX4001	0694760509	CONNECTOR PCB SIDE 177640-6
352	850A600174	CAPSTAN BRAKE ASS'Y (M.J)	CX4003	069779M010	CONNECTOR PCB SIDE TKC-F09X-L1
353	850P300152	GEAR, LOADING S	CX4004	0694220139	CONNECTOR PCB SIDE 173979-2
354	850P300153	GEAR, LOADING T	CX4006	0697FK0080	CONNECTOR PCB SIDE TMC-N20X-B1
355	850A300053	LOADING ARM S ASS'Y			
356	850A300054	LOADING ARM T ASS'Y	H5001	1523D91029	HEAD, AUDIO CONTROL HVNZA1254A
357	850P800263	SPRING, LOADING GEAR	H5002	1543D02011	HEAD, FULL ERASE HVFHF0060A
358	850A000173	MAIN CHASSIS ASS'Y			
359	850P200213	CENTER PULLEY			
			△ M101	1596P58008	MOTOR, LOADING MXN-13FB12F
360	850P600486	PULLEY, LDM 5	△ M2001	1594J98003	CAPSTAN DD UNIT SP398C
361	850P800261	SPRING, C-PULLEY	△ M2003	1589V11003	MICRO MOTOR EPI3CC
362	850A200051	ARM IDLER ASS'Y			
363	850P800270	SPRING, LEVER TENSION	SW101	0520244003	MODE SWITCH SRZ0B064A
364	850A200050	CLUTCH GEAR T ASS'Y			
365	850A200049	CLUTCH GEAR S ASS'Y	PCB570	A4A702A570	DECK RELAY PCB ASS'Y VE4662
366	850P400360	LEVER, TENSION			
367	850P400359	HOLDER, TENSION	△ UN4001	A4A601A500	CYLINDER UNIT ASS'Y A4A601A500
368	850P800256	SPRING, MAIN ROD			
369	850P200215	BELT, CAPSTAN			

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
RESISTORS			SEMICONDUCTORS (CONT.)		
△ R405	R63582010J	R.FUSE 1 OHM 1/2W	D421	D2BFRS4FS0	DIODE.SILICON RS-4FS
△ R433	R3U1811R5J	R.METAL OXIDE 1.5 OHM 1W	D422	D1VT001320	DIODE.SILICON 1SS132T-77
△ R445	R3X20B182J	R.METAL 1.8K OHM 3W	D423	D97U07R51B	DIODE.ZENER MTZJ7.5B T-77
△ R446	R3X28B152J	R.METAL OXIDE 1.5K OHM 3W	D425	D1VT001320	DIODE.SILICON 1SS132T-77
△ R447	R63582102J	R.FUSE 1K OHM 1/2W	D426	D1VT001320	DIODE.SILICON 1SS132T-77
△ R450	R635818R2J	R.FUSE 8.2 OHM 1W	D427	D1VT001320	DIODE.SILICON 1SS132T-77
△ R451	R63581R56J	R.FUSE 0.56 OHM 1W	D430	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2
△ R452	R635818R2J	R.FUSE 8.2 OHM 1W	D431	D1VT001320	DIODE.SILICON 1SS132T-77
△ R465	R5Y2CE2R7J	R.CEMENT 2.7 OHM 7W	D432	D1VT001320	DIODE.SILICON 1SS132T-77
△ R473	R3X18A010J	R.METAL OXIDE 1.0 OHM 2W	△ D501	D2BTRM11C0	DIODE.RECTIFIER RM11C
△ R481	R3X18A101J	R.METAL OXIDE 100 OHM 2W	△ D502	D2BTRM11C0	DIODE.RECTIFIER RM11C
△ R501	R5Y2CE2R2J	R.CEMENT 2.2 OHM 7W	△ D503	D2BTRM11C0	DIODE.RECTIFIER RM11C
△ R505	R3X28B333J	R.METAL OXIDE 33K OHM 3W	△ D504	D2BTRM11C0	DIODE.RECTIFIER RM11C
△ R508	R3U28D473J	R.METAL OXIDE 47K OHM 5W	D505	D28T011E20	DIODE.SILICON 11E2TA1B2
△ R509	R615844R7J	R.FUSE 4.7 OHM 1/4W	D506	D25T1R5NU0	DIODE.SILICON 1R5NU41
△ R512	R3X20B822J	R.METAL 8.2K OHM 3W	D507	D28T011E20	DIODE.SILICON 11E2TA1B2
△ R513	R3X28B150J	R.METAL OXIDE 15 OHM 3W	△ D509	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1B2
△ R517	R635812R2J	R.FUSE 2.2 OHM 1W	△ D510	D28115DF60	DIODE.SILICON 15DF6-FC
△ R531	R3X28AR56J	R.METAL OXIDE 0.56 OHM 2W	D511	D28T10ELS2	DIODE.RECTIFIER 10ELS2TA1B2
△ R538	R011K2155J	RC 1.5M OHM 1/2W	△ D512	D28T1DQ090	DIODE.RECTIFIER 21DQ09-TA2B1
△ R598	R61584470J	R.FUSE 47 OHM 1/4W	D516	D28T011ES1	DIODE.SILICON 11ES1TA1
△ R618	R002T2680J	RC 68 OHM 1/2W	D517	D1VT001320	DIODE.SILICON 1SS132T-77
△ R802	R3X18A103J	R.METAL OXIDE 10K OHM 2W	D518	D1VT001320	DIODE.SILICON 1SS132T-77
△ R805	R3X18A103J	R.METAL OXIDE 10K OHM 2W	△ D519	D280F5KF20	DIODE.FAST RECOVERY F5KF20
△ R810	R3X18A103J	R.METAL OXIDE 10K OHM 2W	△ D520	D97U02701B	DIODE.ZENER MTZJ27B T-77
△ R906	R63584270J	R.FUSE 27 OHM 1/4W	△ D521	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1B2
△ R1042	R615812R7J	R.FUSE 2.7 OHM 1W	D522	D1VT001320	DIODE.SILICON 1SS132T-77
CAPACITORS			D523	D1VT001320	DIODE.SILICON 1SS132T-77
C101	E51XWP104Z	CE 0.1 F 5.5V	D524	D1VT001320	DIODE.SILICON 1SS132T-77
C178	C0J0SL4H1J	CC 22 PF 50V SL	D603	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77
C351	P15300104J	CP 0.1 UF 50V	D604	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77
C412	E0EL02222M	CE 2200 UF 16V	D605	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77
C421	E0EL04102M	CE 1000 UF 35V	D607	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77
C430	C034BN713K	CC 0.001 UF 2KV BN	D611	D1VT001320	DIODE.SILICON 1SS132T-77
C431	E0E70D330M	CE 33 UF 250V	D612	D28T011ES1	DIODE.SILICON 11ES1TA1
C442	P4N2F9682H	CMMP 0.0068UF 1600V	D613	D1VT001320	DIODE.SILICON 1SS132T-77
C443	P4N2F9682J	CMMP 0.0068UF 1600V	D615	D1VT001320	DIODE.SILICON 1SS132T-77
C450	C034BN713K	CC 0.001 UF 2KV BN	D616	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77
C451	P3N1F5153J	CPP 0.015 UF 630V	D618	DD3RLF01L	DIODE.SILICON LFB-01L
C454	P3N1F5273J	CPP 0.027 UF 630V	D621	D1VT024720	DIODE.SILICON 1S2472T-77
C472	P3N1F4154J	CPP 0.15 UF 400V	D701	0021A20210	LED L-531T
C473	P3N1F4124J	CPP 0.12 UF 400V	D702	0021A20210	LED L-531T
C474	P3N1F4823J	CPP 0.082 UF 400V	D707	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2
C476	E53FF56R8K	CE 6.8 UF 50V NP	D709	0021A20210	LED L-531T
C502	C0J8B07H3K	CC 0.0022UF 2KV B	D751	D97U05R11B	DIODE.ZENER MTZJ5.1B T-77
C503	C0J8B07H3K	CC 0.0022UF 2KV B	D753	D1VT001320	DIODE.SILICON 1SS132T-77
△ C506	P2222B104K	CMP 0.1 UF 250V AC	D754	D97U05R11B	DIODE.ZENER MTZJ5.1B T-77
C507	E52C0H101M	CE 100 UF 400V	D755	D1VT001320	DIODE.SILICON 1SS132T-77
C512	C034BN7H3K	CC 0.0022UF 2KV BN	D756	D97U05R11B	DIODE.ZENER MTZJ5.1B T-77
△ C513	C034BN7W2K	CC 820 PF 2KV BN	D801	D1VT001320	DIODE.SILICON 1SS132T-77
C515	E0E7TB010M	CE 1 UF 160V	D802	D1VT001320	DIODE.SILICON 1SS132T-77
C517	C0N0BN7W2K	CC 820 PF 2KV BN	D803	D1VT001320	DIODE.SILICON 1SS132T-77
C521	E53VFB221M	CE 220 UF 160V	D805	D97U01201B	DIODE.ZENER MTZJ12B T-77
C524	E53ZF3222M	CE 2200 UF 25V VZ	D806	D97U01201B	DIODE.ZENER MTZJ12B T-77
△ C530	CB3930M13M	CC 0.001 UF 250V	D807	D97U01201B	DIODE.ZENER MTZJ12B T-77
△ C533	CB3930M13M	CC 0.001 UF 250V	D904	D97U07R51B	DIODE.ZENER MTZJ7.5B T-77
△ C545	CB3930MH3M	CC 0.0022UF 250V	D905	D97U01201B	DIODE.ZENER MTZJ12B T-77
C769	CS0RCH413J	CC 0.001 UF 50V CH	D1001	0001300030	LED SLR-938C-4-A8
C819	C0J8B07H3K	CC 0.0022UF 2KV B	D1003	D1VT001320	DIODE.SILICON 1SS132T-77
C823	C0J0SL4H2J	CC 220 PF 50V SL	D1004	D28T011E10	DIODE.SILICON 11E1TA1B2
C824	C0J0SL4H2J	CC 220 PF 50V SL	D1007	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2
SEMI CONDUCTORS			D1009	D1VT001320	DIODE.SILICON 1SS132T-77
D101	D1VT001320	DIODE.SILICON 1SS132T-77	D1019	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2
D106	D97U06R81B	DIODE.ZENER MTZJ6.8B T-77	D4001	D1VT8721Q0	DIODE.SCHOTTKY RB721Q
D117	D97U06R81B	DIODE.ZENER UZ-6.8BCB-TA	D4501	D97U01301B	DIODE.ZENER MTZJ13B T-77
D118	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2	D4502	D97U01301C	DIODE.ZENER MTZJ13C T-77
D119	D28TEQS040	DIODE.SCHOTTKY 11EQS04TA1B2	D4503	D1VT001320	DIODE.SILICON 1SS132T-77
D120	D1VT001320	DIODE.SILICON 1SS132T-77	D4504	D97U01301B	DIODE.ZENER MTZJ13B T-77
D121	D1VT001320	DIODE.SILICON 1SS132T-77	D6401	D97U01301B	DIODE.ZENER MTZJ13B T-77
D131	DD3RLF01L	DIODE.SILICON LFB-01L	D6402	D97U01301B	DIODE.ZENER MTZJ13B T-77
D402	D97U01201B	DIODE.ZENER MTZJ12B T-77	IC101	I55D06034A	IC OEC6034A
D403	D28T011E10	DIODE.SILICON 11E1TA1B2	IC102	IC3D0C04C0	IC ST24C04CB1
D404	D1VT001320	DIODE.SILICON 1SS132T-77	IC103	I9UJ0T600H	IC PST600H
D405	D1VT001320	DIODE.SILICON 1SS132T-77	△ IC353	I01SP52650	IC AN5265
D410	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1B2	△ IC401	I05SD84030	IC TA8403K
D411	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1B2	△ IC402	I55DA859C	IC TA859CP
D413	D28T10ELS6	DIODE.RECTIFIER 10ELS6TA1B2	△ IC403	I0QK98M090	IC NJM78M09FA
D415	D1VT001320	DIODE.SILICON 1SS132T-77	△ IC404	0002500270	IC PHOTO COUPLER TLP521-1
D418	D1VT024720	DIODE.SILICON 1S2472T-77	△ IC501	I0ED046050	IC TDA4605-3
D420	D28FRU4AM0	DIODE.SILICON RU-4AM	△ IC502	I0Q0978050	IC NJM7805FD
			△ IC503	I0Q0978090	IC NJM7809FA
			△ IC504	I0QK978120	IC NJM7812FA

ELECTRICAL REPLACEMENT PARTS LIST

REF.NO.	PART NO.	DESCRIPTION	REF.NO.	PART NO.	DESCRIPTION
SEMICONDUCTORS (CONT.)			SEMICONDUCTORS (CONT.)		
IC601	105DE8867B	IC	TA8867BN	Q1001	TNUTC05001 COMPOUND TRANSISTOR DTC124EKT147
IC751	157D453880	IC	BU45388	Q1003	TNUTC05001 COMPOUND TRANSISTOR DTC124EKT147
IC752	103S063930	IC	LA6393S	Q1004	TPYTC05001 COMPOUND TRANSISTOR DTA124EKT147
IC753	155DHC123P	IC	TC74HC123AP	Q1010	TPYTC05001 COMPOUND TRANSISTOR DTA124EKT147
IC901	105DE8751A	IC	TA8751AN	Q1017	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
IC1001	157F59030C	IC	OEC9030C	Q1018	TNUTC05001 COMPOUND TRANSISTOR DTC124EKT147
IC1002	107S09029A	IC	OEC9029A	Q1028	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
IC4001	103D374420	IC	LA7442	Q1029	TBWT009260 TRANSISTOR.SILICON 2SB926-AA
IC4002	153D399700	IC	LC89970	Q1030	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
IC4101	103FG7411M	IC	LA7411M-TP-T	Q1031	TB3T006980 TRANSISTOR.SILICON 2SB698-AA
IC4501	103S071510	IC	LA7151	Q1051	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
IC5001	103D772860	IC	LA7286	Q1052	TCYT2872S0 TRANSISTOR.SILICON 2SC2872S
IC6001	106DA52313	IC	M52313SP	Q1053	0002G00490 PHOTO COUPLER 6P1S94
IC6301	103F071050	IC	LA7105M-TP-T1	Q1054	0002G00490 PHOTO COUPLER 6P1S94
IC6302	103D06358T	IC	LA6358T	Q1055	0000700320 TRANSISTOR PHOTO RPT-38PB113
IC6303	10M190574J	IC	UPC574J-T	Q1056	0000700320 TRANSISTOR PHOTO RPT-38PB113
IC6401	103S071510	IC	LA7151	Q4001	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q102	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4005	TPYTC05001 COMPOUND TRANSISTOR DTA124EKT147
Q104	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4006	TPYTD05001 COMPOUND TRANSISTOR DTA144EKT147
Q105	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4014	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q106	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4022	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q109	T6YA1037K0	TRANSISTOR.SILICON	2SA1037KT147	Q4039	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q110	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4040	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q353	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4101	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q370	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	Q4104	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q401	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	Q4105	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q402	TC30041600	TRANSISTOR.SILICON	2SC4160-ORI	Q4106	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q403	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	Q4107	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q404	TNUTJ03001	COMPOUND TRANSISTOR	DTC114TSTP	Q4108	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q405	TC3Q026210	TRANSISTOR.SILICON	2SC2621-RAC	Q4109	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q406	TDFU024990	TRANSISTOR.SILICON	2SD2499	Q4112	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q407	TNUTJ03001	COMPOUND TRANSISTOR	DTC114TSTP	Q4301	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q408	TNUTJ03001	COMPOUND TRANSISTOR	DTC114TSTP	Q4501	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q409	TCYT1740S0	TRANSISTOR.SILICON	2SC1740SP TP	Q4502	TA3T0608K0 TRANSISTOR.SILICON 2SA608K-NP
Q410	TD3T008630	TRANSISTOR.SILICON	2SD863-AE	Q4503	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q411	TB3T008920	TRANSISTOR.SILICON	2SB892-AE	Q4504	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q412	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	Q4505	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q413	TB3T008920	TRANSISTOR.SILICON	2SB892-AE	Q5003	TCKT013170 TRANSISTOR.SILICON 2SC1317-T
Q414	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	Q6002	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q415	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	Q6003	TC3T030000 TRANSISTOR.SILICON 2SC3000-AA
Q416	T230002010	TRANSISTOR.FIELD EFFECT	2SK2010	Q6101	TNUTC05001 COMPOUND TRANSISTOR DTC124EKT147
Q500	T25FK20560	TRANSISTOR.FIELD EFFECT	2SK2056	Q6104	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q501	TC3T029090	TRANSISTOR.SILICON	2SC2909-AA	Q6304	T82A037340 TRANSISTOR.SILICON 2SC3734
Q502	TA3T1371A0	TRANSISTOR.SILICON	2SA1371-AE	Q6502	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q503	TC30041600	TRANSISTOR.SILICON	2SC4160-ORI	Q6503	T6YA1037K0 TRANSISTOR.SILICON 2SA1037KT147
Q504	TD3T007340	TRANSISTOR.SILICON	2SD734-AA	Q6504	T8YA2412K0 TRANSISTOR.SILICON 2SC2412KT147
Q505	TA3T016240	TRANSISTOR.SILICON	2SA1624-AA	COILS & TRANSFORMERS	
Q601	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L001	02A6A8A0A1 CORE.FERRITE HF57T18.5*10*10
Q603	T6YA1037K0	TRANSISTOR.SILICON	2SA1037KT147	L002	02A6B2E0A1 CORE.FERRITE HF70T22*10*14
Q604	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L003	02A6A8A0A1 CORE.FERRITE HF57T18.5*10*10
Q606	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L101	021LA6330K COIL 33 UH
Q607	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L102	021LA6220K COIL 22 UH
Q608	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L351	0216731R0K COIL 1.0 UH
Q611	TPYTB05001	COMPOUND TRANSISTOR	DTA114EKT147	L401	0226000008 COIL.LINEARITY L0002
Q612	TPYTB05001	COMPOUND TRANSISTOR	DTA114EKT147	L470	02D6000001 COIL L0007
Q613	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L501	029K000001 COIL.LINE FILTER R-20871
Q615	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L502	029K000001 COIL.LINE FILTER R-20871
Q616	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L503	028R200022 COIL.DEGAUSS 8200022
Q617	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L504	021U6D680K COIL 64 UH
Q618	TNUTB05001	COMPOUND TRANSISTOR	DTC114EKT147	L601	021LA6120K COIL 12 UH
Q621	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L602	021LA68R2K COIL 8.2 UH
Q703	T8YA2412K0	TRANSISTOR.SILICON	2SC2412KT147	L603	021LA6330K COIL 33 UH
Q751	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	L605	021LA6680K COIL 64 UH
Q752	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	L701	021BS1220K COIL 22 UH
Q753	TAST007330	TRANSISTOR.SILICON	2SA733(C)-T	L752	021673471K COIL 470 UH
Q754	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	L801	021673101K COIL 100 UH
Q755	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	L4001	02167D101K COIL 100 UH
Q756	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	L4003	02167D101K COIL 100 UH
Q757	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	L4009	02167B101K COIL 100 UH
Q758	TAST007330	TRANSISTOR.SILICON	2SA733(C)-T	L4018	02167B101K COIL 100 UH
Q759	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	L4026	02167B101K COIL 100 UH
Q760	TAST007330	TRANSISTOR.SILICON	2SA733(C)-T	L4102	021673101K COIL 100 UH
Q762	T23T003040	TRANSISTOR.FIELD EFFECT	2SK304-SPA	L4103	021673101K COIL 100 UH
Q763	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	L4105	021LA6150K COIL 15 UH
Q764	TAST007330	TRANSISTOR.SILICON	2SA733(C)-T	L4106	021LA6121K COIL 120 UH
Q765	TNUTB03001	COMPOUND TRANSISTOR	DTC114ESTP	L4108	021LA6470K COIL 47 UH
Q766	TCST009450	TRANSISTOR.SILICON	2SC945(C)-T	L4109	021LA6100K COIL 10 UH
Q801	TA3T016240	TRANSISTOR.SILICON	2SA1624-AA	L4110	021LA6220K COIL 22 UH
Q802	TA3T016240	TRANSISTOR.SILICON	2SA1624-AA	L4111	021LA6271K COIL 270 UH
Q803	TA3T016240	TRANSISTOR.SILICON	2SA1624-AA	L4112	021673101K COIL 100 UH
Q804	TC3F042170	TRANSISTOR.SILICON	2SC4217-RAC	L4113	021LA6271K COIL 270 UH
Q805	TC3F042170	TRANSISTOR.SILICON	2SC4217-RAC	L4114	021LA6151K COIL 150 UH
Q806	TC3F042170	TRANSISTOR.SILICON	2SC4217-RAC	L4117	021LA6271K COIL 270 UH
Q901	TALT00952L	TRANSISTOR.SILICON	2SA952(C)-T L		

ELECTRICAL REPLACEMENT PARTS LIST

REF. NO.	PART NO.	DESCRIPTION	REF. NO.	PART NO.	DESCRIPTION
COILS & TRANSFORMERS (CONT.)			MISCELLANEOUS (CONT.)		
L4302	021LA6220K	COIL 22 UH	CD830	068129076A	CORD, CONNECTOR 8129076A
L4501	021673101K	COIL 100 UH	CD850	06812D059A	CORD, CONNECTOR 812D059A
L4502	021673101K	COIL 100 UH	CD860	068123052A	CORD, CONNECTOR 8123052A
L4503	021LA6100K	COIL 10 UH	CP005	069W01001A	CONNECTOR PCB SIDE 003P-2100
L4504	021LA6100K	COIL 10 UH	CP302	0694120099	CONNECTOR PCB SIDE 171825-2
L5001	021B73102K	COIL 1000 UH	CP501	0694430100	CORD, UX CONNECTOR 2-173270-3
L5002	021B73101K	COIL 100 UH	CP502	069W420029	CONNECTOR PCB SIDE TV-50P-02-A1
L6002	021673101K	COIL 100 UH	CP801	069W330018	CONNECTOR PCB SIDE TS-80P-03-V1
L6004	021LA6150K	COIL 15 UH	CP802	069W350018	CONNECTOR PCB SIDE TS-80P-05-V1
L6005	021LA61R0M	COIL 1.0 UH	CP803	067R104019	WIRE HOLDER 51052-0400
L6007	021LA66R8K	COIL 6.8 UH	CP807	069W010020	CONNECTOR PCB SIDE 005P-1100
L6009	021LA6120K	COIL 12 UH	CP810	069E280129	CONNECTOR PCB SIDE 00 8283 0812
L6010	021LA66R8K	COIL 6.8 UH	CP820	069E2C0129	CONNECTOR PCB SIDE 00 8283 1212
L6011	033600038R	COIL, VIDEO IFT 3600038	CP830	069E290129	CONNECTOR PCB SIDE 00 8283 0912
L6012	033600037R	COIL, VIDEO IFT 3600037	CP850	06942D0129	CONNECTOR PCB SIDE 1-173981-3
L6013	03360M0021	COIL, VIDEO IFT 360M002	CP860	069E230129	CONNECTOR PCB SIDE 00 8283 0312
L6016	021LA6820K	COIL 82 UH	CD6101	068101411A	CORD, CONNECTOR 8101411A
L6101	021673101K	COIL 100 UH	CF6001	1012T5R503	FILTER, CERAMIC TRAP TPS5.5MB-TF21
L6103	021673101K	COIL 100 UH	CF6003	1012T05R52	FILTER, CERAMIC SFE5.5MC2-TF21
L6105	02167D102K	COIL 1 MH	CF6004	1027238R91	FILTER, SAW F-1044QS
L6401	02167B101K	COIL 100 UH	CF6005	1012T5R509	FILTER C.DISCRI CDSH5.5ME44K-TF
T401	03305Y002S	TRANS., HORIZONTAL DRIVE 305Y002	CP1001	0697150310	CONNECTOR PCB SIDE TAS-X05X-D1
T501	048140031W	TRANSFORMER, SWITCHING 8140031W	CP1002	06979K0040	CONNECTOR PCB SIDE TMC-N20P-E1
T5001	033626010R	COIL, BIAS OSC 3626010	CP4001	06979M0040	CONNECTOR PCB SIDE TMC-N22P-E1
JACKS			CP4101	069R750499	CONNECTOR PCB SIDE 52492-0520
J352	060C121009	JACK, RCA 3.5 TC38-066-P1	CP4103	069J740109	CONNECTOR PCB SIDE IMSA-9603S-04C
J702	0607401001	JACK, RCA LPR1020-0300M	CP4104	0697FM0080	CONNECTOR PCB SIDE TMC-N22X-B1
J801	0666120011	SOCKET, CRT CVT3325-0603	CP4106	0694240139	CONNECTOR PCB SIDE 173979-4
J4501	0632100029	SOCKET, 21PIN HXC1525-01-010	CP4501	0694130019	CONNECTOR PCB SIDE 171825-3
SWITCHES			CP6001	069J1C0260	CONNECTOR PCB SIDE 6035B-12Z002-T
SW501	0530105015	SWITCH ESB998	CP6115	0694140059	CONNECTOR PCB SIDE 171826-4
SW701	0504101T32	SWITCH, TACT EVQ P81 05K	CP803A	067R104019	WIRE HOLDER 51052-0400
SW702	0504101T32	SWITCH, TACT EVQ P81 05K	CUS012	800WF00019	CUSHION-C
SW703	0504101T32	SWITCH, TACT EVQ P81 05K	CX4501	069J240028	CONNECTOR PCB SIDE IMSA-9115B-04
SW704	0504101T32	SWITCH, TACT EVQ P81 05K	CX4502	069J260028	CONNECTOR PCB SIDE IMSA-9115B-06
SW705	0504101T32	SWITCH, TACT EVQ P81 05K	CX4503	069J260028	CONNECTOR PCB SIDE IMSA-9115B-06
SW706	0504101T32	SWITCH, TACT EVQ P81 05K	CY4501	069J240038	CONNECTOR PCB SIDE IMSA-9115S-04L
SW707	0504101T32	SWITCH, TACT EVQ P81 05K	CY4502	069J260038	CONNECTOR PCB SIDE IMSA-9115S-06L
SW708	0504101T32	SWITCH, TACT EVQ P81 05K	CY4503	069J260038	CONNECTOR PCB SIDE IMSA-9115S-06L
SW1010	0501A02002	PUSH SWITCH MPU20250MLB0	DL601	104W14R43F	DELAY LINE GLASS ADL-CP145R
VARIABLE RESISTORS			DL602	103402R501	DELAY LINE SDL-4104
VR501	V1263Q2BTC	VOLUME, SEMI FIXED RH063MCS2R07A	DY801	0275052003	DY TY-20NA4K
VR601	V126314B16	VOLUME, SEMI FIXED RH0638C14R0TA	F501	0808T04002	FUSE 4A
VR751	V1263H4B77	VOLUME, SEMI FIXED RH0683CJ4R04A	FB401	043220043A	TRANSFORMER FLYBACK 3220043
P.C. BOARD ASSEMBLIES			FH501	06710T0006	HOLDER, FUSE EYF-52BC
PC8010	A52202A01A	PCB ASS'Y VM6112A	FH502	06710T0006	HOLDER, FUSE EYF-52BC
PC8070	A52202A07A	PCB ASS'Y TM6355A	ICP501	083PC1R602	MICRO FUSE 25101.6
PC8110	A52202A11A	PCB ASS'Y TC6230A	ICP502	083PC04002	MICRO FUSE 251004
PC8260	A52202A26A	PCB ASS'Y VE5731A	ICP503	083PC05002	MICRO FUSE 251005
PC8330	A52101A33A	PCB ASS'Y VE5706C	ICP504	083PC04002	MICRO FUSE 251004
PC8350	A52202A35A	PCB ASS'Y VE4666B	K001	129C000014	WEDGE DB25SR
PC8570	A4A702A570	PCB ASS'Y VE4662B	K002	129C000014	WEDGE DB25SR
MISCELLANEOUS			K003	129C000014	WEDGE DB25SR
B301	024AC14014	CHIP SOLID INDUCTOR BLM31B601SPT	K004	129C000014	WEDGE DB25SR
B354	024AC14014	CHIP SOLID INDUCTOR BLM31B601SPT	MG801	0265052003	MAGNET TP-8600EX3
B355	024AC14014	CHIP SOLID INDUCTOR BLM31B601SPT	OS701	0779014002	REMOTE RECEIVER GP1U281Q
B401	0241T03851	CORE BEADS EXCELSA35T	PF5001	0326230038	COIL, TRAP 2623003
B402	0241T03851	CORE BEADS EXCELSA35T	RY501	0560Q10114	RELAY SDT-SS-109DM
B501	0241T03851	CORE BEADS EXCELSA35T	SP351	070W532007	SPEAKER MS-2D30SB326-16
B502	0241T03851	CORE BEADS EXCELSA35T	SP352	070W532007	SPEAKER MS-2D30SB326-16
B503	0241T03851	CORE BEADS EXCELSA35T	TH501	D8R0F140M0	DEGAUSS ELEMENT PTH451C262BF140M
B504	0241T03851	CORE BEADS EXCELSA35T	TM101	076R0BC010	TRANSMITTER R25-0252
B505	0241T03851	CORE BEADS EXCELSA35T	TU6001	0145601030	TUNER TELE4-052A
B506	0241T03851	CORE BEADS EXCELSA35T	V801	09W5200002	CRT W/O DY W46LFH193X
B507	0241T03851	CORE BEADS EXCELSA35T	X101	100C32R803	CRYSTAL DSVT-200 32.768KHZ
BT001	1412004004	BATTERY, MANGAN UM-4 (GR)	X102	1001T8R004	CERAMIC OSCILLATOR EFOEC8004T4
BT002	1412004004	BATTERY, MANGAN UM-4 (GR)	X601	1002R01502	CERAMIC OSCILLATOR CSB503F30
B4501	024AC14015	CORE BEADS (CHIP) BLM31A601SPT	X602	100W4R43B2	CRYSTAL HC49U 4.433619MHZ
B4502	024AC14015	CORE BEADS (CHIP) BLM31A601SPT	X1001	100CA8R005	CRYSTAL HC-49/U-S 8.0MHZ
B6101	024AC14015	CORE BEADS (CHIP) BLM31A601SPT	X4001	100CA4R404	CRYSTAL HC-49/U-S 4.433619MHZ
CD005	068701415A	CORD, CONNECTOR 8701415A	RESISTOR		
CD302	068D12395A	CORD, CONNECTOR 8D12395A	RC.....CARBON RESISTOR		
CD501	120T650804	CORD, AC 120T650804	CAPACITORS		
CD801	06CP83035A	CORD, CONNECTOR CP83035A	CC.....	CERAMIC CAPACITOR	
CD803	122U042902	CORD, JUMPER 2-042902	CE.....	ALUMI ELECTROLYTIC CAPACITOR	
CD804	068101410A	CORD, CONNECTOR 8101410A	CP.....	POLYESTER CAPACITOR	
CD810	068128092A	CORD, CONNECTOR 8128092A	CPP.....	POLYPROPYLENE CAPACITOR	
CD820	06812C063A	CORD, CONNECTOR 812C063A	CPL.....	PLASTIC CAPACITOR	
			CMP.....	METAL POLYESTER CAPACITOR	
			CMPL.....	METAL PLASTIC CAPACITOR	
			CMPP.....	METAL POLYPROPYLENE CAPACITOR	
			CST.....	STYROL CAPACITOR	